DEPARTMENT OF THE INTERIOR

UNITED STATES RECLAMATION SERVICE

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MANUAL OF FIELD ACCOUNTING

WASHINGTON

1907

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LETTER OF TRANSMITTAL.

Department of the Interior,
United States Reclamation Service,
Washington, D. C., February 18, 1907.

Chief Engineer,
U. S. Reclamation Service,
Washington, D. C.

Sir: The committee charged with the duty of devising a uniform system of accounting for the Reclamation Service, with particular reference to field operations, begs leave to present herewith its report.

The plan outlined has been tested beyond the experimental stage, as the major portion of it has been used for considerably over a year on the Salt River project, and for several months on the Yuma, Carlsbad, and Truckee-Carson projects, and is producing most excellent results. Most of our labors, therefore, have been confined to studying conditions on the projects on which construction work is being carried or is contemplated. While experience will probably suggest improvements in matters of detail, and it may be found that certain instructions will be difficult of execution, and certain blanks and forms may require modification, in the main the general principles outlined are thought to be correct, and to be what is needed to collect the desired data.

In a service carrying on so many different classes of work in so large a territory, it is difficult to formulate any set of rules and regulations, or to design blanks and forms for accounting, that will prove flawless; and therefore it is suggested that the engineers, accountants, and others be in-

vited to make suggestions as to modifications or amplifications of blanks and forms, and also as to the principles and routine set out in the text.

It is recognized that those who will use the system are the proper ones to make suggestions looking to improvements in details, and your committee will welcome any suggestions that may be made. Anticipating the receipt of such criticisms and suggestions, your committee has ordered but a six months' supply of the blanks and forms—samples of which are submitted—and have opened a "Revision of Forms" file, in which all such correspondence will be filed, together with the particular blank or form in which changes are suggested. These letters will be considered by the committee from time to time, and the forms changed when reprints are ordered. Your committee will be able to keep this work up to date by correspondence, if you desire this to be a permanent committee, which is suggested.

It is furthermore suggested that all printing affecting accounting be discontinued in the field, and that requisitions for such work should be sent to your office, and be referred to the Committee on Uniform Accounting.

After the new system has been inaugurated all blanks that do not conform to the system as outlined should be ordered to be sent to this office.

Respectfully submitted.

N. E. WEBSTER, Jr.,
Accountant.

E. G. LIND,
Field Inspector.

Manual of Field Accounting.

OFFICE EQUIPMENT.

Every project office should be provided with the usual office furniture, such as desks, tables, chairs, typewriting machines, books, and filing cases, safe or vault for the protection of records from fire, and ordinary fire-fighting appliances. An adding machine should be in every project office, as its use has been found to save both time and money.

The office should be kept in a neat and orderly manner, and the employment of a man as janitor, messenger, and mail-carrier has been found necessary on many projects.

Office hours should be fixed at not less than seven nor more than eight hours, and as a rule should be from 8 a. m. to noon, and from 1 to 5 p. m.

ORGANIZATION.

Each project office should be composed of two distinct sections so far as accounting is concerned: (1) Engineering or Technical Section, and (2) Chief Clerk's or Accounting Section. These two sections should maintain separate letter files, for convenience, and should in general organize as outlined below:

ENGINEERING OR TECHNICAL SECTION.

The engineering or technical section should consist of the engineer in charge, a stenographer, and a cost keeper.

STENOGRAPHER.

The stenographer should open all official mail matter addressed to the project office, stamping each letter with date of receipt and necessary reference marks. He should

carefully sort the mail, giving to the project engineer such technical letters as he has reason to believe that official will answer direct, and referring to the chief clerk all correspondence pertaining to accounting. He should have charge of the engineer's letter file, and act in the capacity of general clerk and secretary to him. He should report directly to the project engineer. (*See also* Correspondence and Letter Files.)

COST KEEPER.

The cost keeper should collect all cost data intended for the use of the project engineer and should see that the cost records are kept up to date. These data will be obtained from the daily and monthly feature reports and from the chief clerk, through the bookkeeper. He should confer frequently with both the project engineer and chief clerk and see that a list of bookkeping accounts, with their account numbers and instructions, are sent out to engineers, superintendents, and others who are expected to make reports of costs. When new work of any character is contemplated he should hold a conference with the project engineer in order to learn just what cost data are to be kept. At least once a month the project engineer should go over all cost records in order to ascertain if satisfactory information is being furnished regarding the character of the work already under construction. The cost keeper should spend as much time as practicable on the work, so that he may study existing conditions and anticipate the wishes of the project engineer regarding the collection of better and more detailed cost information. After the cost keeper has become well acquainted with his duties, he should be able to detect improper and crude methods of handling material and to point out places where both time and money may be spent to better purpose and with better results, and he should keep the project en-

gineer informed in regard to such cases so that abuses may be promptly corrected and methods improved. He should make up the monthly reports of the project engineer to the Chief Engineer, and should perform all work necessary to keep the cost records in a businesslike manner so that the project engineer may always be in a position to change promptly antiquated methods and stop unnecessary expenditures of every description. The cost keeper need not be an engineer, but the assignment of a young engineer to this work is desirable, because an engineer will usually be better informed as to methods and because of the educational advantages of the work. The cost keeper should report directly to the project engineer. (*See also* Engineering Construction, Costs, etc.)

CHIEF CLERK'S OR ACCOUNTING SECTION.

The chief clerks' or accounting section should consist of the following employees:

Chief Clerk, Purchasing Agent, Transportation Clerk, Forwarding Agent, Storehouse Clerk, Property Inspector, Stationery Clerk, Mercantile Store Clerk, Steward, Timekeepers, Pay-roll Clerk, Bookkeeper, Special Fiscal Agent, Stenographer.

CHIEF CLERK.

The chief clerk should be responsible for all the accounting of the project, including his own office force as outlined above. He should also be in charge of the office building, headquarters, and visitors' sleeping quarters, headquarters mess and grounds, and such other matters as pertain to accounting and as the project engineer may direct him to administer. All mail pertaining to the business of the accounting section should be referred to him, and should be distributed to the clerks whose business it is to properly consider and handle it. The chief clerk should settle all

questions affecting accounting matters referred to him and should report direct to the project engineer.

PURCHASING AGENT.

The purchasing agent should make all purchases, and employees should place no orders that have not gone through his hands. He should (a) receive requests for purchases, (b) send out advertisements for bids, (c) award bids in the name of the project engineer, (d) place orders with merchants, and (e) make up all purchase vouchers for payment for goods received. (*See also* Purchases.)

TRANSPORTATION CLERK.

The transportation clerk should handle all matters concerning bills of lading for freight, express, and wagon hauling. He should keep a complete record of all bills of lading and transportation requests, and should work in conjunction with the purchasing agent. Generally, it will be found best for him to report directly to the purchasing agent. (*See also* Transportation.)

FORWARDING AGENT.

On some projects the employment of a forwarding agent may be desirable. Such a man would generally be necessary on projects located several miles from the nearest railroad station. His duties would consist largely in superintending the receipt and forwarding of freight and express, in aiding the purchasing agent to obtain bids and place orders, in loading wagons, and generally in representing the purchasing agent. The forwarding agent should report to the transportation clerk.

STOREHOUSE CLERK.

The storehouse clerk should make requests for purchases on the purchasing agent, receive and receipt for all

material, supplies, and equipment intended for the use of the project, issue material and supplies on requisitions, and keep a complete record of all storehouse transactions. (*See also* Storehouses.)

PROPERTY INSPECTOR.

The property inspector should keep a complete record of the quantity, condition, and location of all equipment on the project. He should make frequent inspection trips over the various features of the project, to look into the condition and care of equipment, and to superintend the branding of animals and other Government property. He should be accountable for all the property on the project. (*See also* Equipment.)

STATIONERY CLERK.

The stationery clerk should make requisitions, through the purchasing agent, on the office of the Chief Engineer for all stationery. He should receive and issue on requisition all stationery for the project and should keep a complete record of the stock on hand, amounts issued, etc. He should be held responsible for any shortage in stock of stationery. (*See also* Stationery.)

MERCANTILE STORE CLERK.

This clerk should receive, after requisition on the storehouse clerk, such merchandise as is issued for sale. He should keep a complete account of all receipts and sales, and be accountable for the businesslike management of the mercantile store. (*See also* Mercantile Stores.)

STEWARD.

(*See* Mess Houses.)

TIMEKEEPERS.

These employees should take the time records of all persons employed, attend to the signing of pay rolls, give out time checks, etc. They should not be allowed in any case to distribute the fiscal agent's checks to employees. (*See also* Timekeeping.)

PAY ROLL CLERK.

This clerk should receive all time books and time checks, make up all pay rolls, and in order to avoid duplication, check the charges for meals on travel and field expense accounts, and for services on pay rolls. He should prepare all communications to timekeepers in regard to their work, and should have charge of any open rolls. He should be an intermediary between the employee who is to be paid and the special fiscal agent. He should also make up all contracts for personal employments and team and wagon hire, etc., and make out vouchers for such accounts. (*See also* Pay Rolls.)

BOOKKEEPER.

The bookkeeper should be in complete charge of all books kept on the project—voucher register, cost and general ledgers, etc., and should be responsible for the receipt, safekeeping and issue of stores coupons, meal tickets, and rent agreements. He should frequently consult the cost keeper in order to see that all necessary data are being sent in from the field. He should prepare certain monthly reports for the project engineer and others, (*See also* Account Number System.)

SPECIAL FISCAL AGENT.

The special fiscal agent should pay all accounts presented to him for payment after auditing them as to correctness of form, etc. While for convenience he may occupy space in

the chief clerk's room, he should report directly to the project engineer. He should pay all accounts promptly, as prompt payment means, as a rule, lower prices, and he should aid the purchasing agent in obtaining cash discounts by disposing of routine business in a prompt and businesslike manner. The special fiscal agent should also collect and receipt for all money that it is his duty to handle and see that it is promptly forwarded to the office of the chief engineer. He should be provided with a safe or vault for the safe keeping of his check books and other valuable books and records, and he alone should have access to it or to that portion assigned him. He should have absolutely nothing to do with the making of purchases or the preparation of vouchers, and he should be surrounded with every possible check that would tend to safeguard the Government's interests as well as his own. The special fiscal agent's duties are so varied that no attempt is here made to outline them completely. His work is a specialty, and laws are constantly being enacted and decisions made which tend to change the details of the conduct of his business. The special fiscal agent may be frequently importuned by merchants and others to act as their collector, or to protect them against loss in the transaction of business with Government employees. Under no circumstances should such an arrangement be permitted.

Official mail intended for the special fiscal agent should be given directly to him, and need not go through the hands of the project engineer or of the chief clerk.

As the fiscal agent may on short notice be moved from point to point in the field, it may be convenient for him to use a press copy letter book for keeping copies of his letters. This book, together with such letters as he may receive, should remain in his own custody while he continues to serve in this capacity, and thereafter be filed as directed, so that they may become a part of the project office records.

STENOGRAPHER.

This clerk should attend to all correspondence for the chief clerk, and such letters as are not disposed of by other clerks in this section. He should have charge of the letter files and do general clerical work. (*See also* Correspondence and Letter Files.)

GENERAL NOTES ON CHIEF CLERK'S OR ACCOUNTING SECTION.

All the employees mentioned under chief clerk's or accounting section should report to the chief clerk. It is not supposed that all of these clerks would be employed on every project. As a rule, one clerk may be given more than one of the duties specified. On one of the largest projects in the Service, but seven clerks are required to handle all the accounting for the project. These duties and designations are specified in order to suggest some kind of an office organization, for without such organization it is hardly to be expected that the ordinary routine business of an office can be carried on expeditiously or that the best results can be obtained. The chief clerk and his subordinates should exert every effort to save the project engineer and his technical subordinates from the performance of any clerical work. The accountant's duties are quite as much of a specialty as are the duties of the engineer, but if the engineer is compelled to do this class of work he must neglect other, and, for him, more important duties. If the engineer is unhampered by office and clerical work he will be able to be in and about the works frequently and perhaps save on one trip as much as the salary of a clerk for an entire year. The clerical force should bear these matters in mind.

The chief clerk should make every effort to see that work is not duplicated. Care should be taken to see that a complete check is kept on all material and supplies received and issued. It is not only a duty owing to the employee, but

to the Service as well. It is unfair to lay responsibilities on an employe who has to work by slipshod or unbusinesslike methods, and to place him in a position where he may be unable to prove his innocence of wrongdoing should his official actions be subjected to close scrutiny.

The clerks should be shifted from one position to another from time to time, and generally this should be done without notice. A plan of this kind not only makes each man in the office more useful to the project, but to the Service in general, and may enable clerks to offer valuable suggestions as to the methods employed or often to detect irregular practices which should be abolished. Such a plan is particularly desirable in the case of timekeepers.

Much time and labor may be saved by using the project engineer's rubber stamp facsimile signature on routine and unimportant papers, the chief clerk initialing under such signature.

All clerks should be instructed in the use of the typewriting machine, so that they may attend to routine correspondence connected with their desks, instead of giving all this work to the stenographer. Such a practice generally results in the saving of much time.

As a general rule, time should be designated when letters should be given the project engineer and chief clerk for reading and signing. This may prevent frequent interruptions and insure a more careful reading of letters. All letters and documents should receive prompt consideration. Laxity in such matters tends to prejudice the public mind against the Service, and frequently results in serious difficulty. At times letters and papers of great importance, that are not considered routine in character, may be referred to the chief clerk for consideration, and he may not wish to assume full responsibility for the reply. In such cases an answer should be written and taken to the project engineer for signature.

The engineer may not sign it, but if the letter is prepared, time will be saved, and the engineer will be better able to criticise the letter.

If the chief clerk is to be held accountable for results he should largely have a free hand and be expected to recommend the hiring, promotion, or dismissal of the employees whom he directs.

PURCHASES.

GENERAL DIRECTIONS.

All purchases should be made by the purchasing agent, or be entered on his records. The purchasing agent should be provided with a desk telephone, when practicable, in order that he may obtain quotations quickly and place emergency orders. All quotations received and orders placed by telephone should be confirmed in the regular manner.

The purchasing agent should make every endeavor to obtain goods at the lowest price, always considering quality. If there is no good market in the immediate vicinity of the project, he may buy in other and more remote markets, quick delivery, fair prices, and good quality being also taken into consideration. An impression prevails on some of the projects that because farmers and others in the vicinity have ultimately to pay for the project the Service must deal with them or with local merchants, irrespective of prices, quality, and time of delivery. This is a fallacy. The Reclamation Service is, of course, glad to do business with persons particularly interested in the project, but it must do business with persons who can give the best prices and service.

Frequently it has been found to be of great value to the project to allow the purchasing agent to take from time to time trips to large distributing points in order to induce merchants and others to bid on advertisements. The cost of such a trip may frequently be saved on one order.

Every project purchasing agent should keep a price book or record, and endeavor to keep it up to date. There are a number of such books on the market, and as good a one as can be bought is the Unimatic Price Book, but an ordinary blotter may be used. These books are of great value to the purchasing agent in awarding bids or making estimates of the cost of a certain article or group of articles.

All boxes and packages should be marked with the name of the project engineer and all orders should be placed in his name.

Too much importance can not be attached to shipping and marking directions on Purchase Orders. If an order is made for a particular project feature, care should be taken that the order shows what that feature is, thus:

> "Mark packages ——— ———, Engineer, U. S. Reclamation Service, Lujane, Colo. For office, corral, or tunnel, etc."

If this is done large pieces of machinery or other material can be hauled directly to the feature for which it is intended, the engineer, superintendent, or foreman acting as the agent for the storehouse clerk, who will make one issue and receipt to cover the transaction. This avoids the necessity of taking the package or packages to the storehouse to be identified and then hauling them again to the place at which they are to be used.

All invoices should be sent in in duplicate by merchants, who should be urged to use the project purchase order number in communications, on invoices, and in marking boxes. This plan will greatly aid the storehouse clerk in locating a shipment, and tracing it to an invoice. When projects are remote from railroad points and a forwarding agent is employed, it will not be necessary to open boxes in order to check the deliveries against purchase orders and the pur-

chasing agent will be able to locate the shipment in his copy of the purchase order.

No invoice should, without excellent reason, be held up in a project office for over thirty days from its receipt. In the majority of instances but a few days should elapse from the time an invoice is receipted by the store house clerk until its final payment.

All vouchers for purchases and contract claims and releases should be made out under the direction of the purchasing agent. The responsibility of the purchasing agent should end when the purchase order and shipping instructions have been issued, and when certified vouchers have been prepared under his direction.

When practicable, all vouchers should be made up at the project office instead of in the field. Engineers who are located at places remote from the office should O. K. any bills they may have contracted and send them in to the project office, so that the vouchers may be made out. This would save the engineers clerical work, and insure the voucher being prepared in a neat and business-like manner.

The purchasing agent should endeavor to keep down the number of vouchers. Frequently one voucher can cover a number of invoices, and when this is possible it should be done.

Care should be taken that all vouchers are prepared neatly. There is very little excuse for scratched or slovenly looking vouchers being made up at a project office, particularly in one where a disbursing officer is located.

The purchasing agent should also keep a purchase order book. Any form of blotter will do for this purpose. In this book should be listed all purchase orders consecutively by number, giving amount of order, name of merchant, shipping directions, for whom ordered (features, etc.), date of receipt of goods, and any other notes necessary. All pur-

chase orders placed for the project should have one of these order numbers, which the purchasing agent should supply.

TRACING A PURCHASE AND REQUISITION.

All engineers, superintendents, foremen, chiefs of parties, or others whose requisitions for supplies or material on the storehouse are to be honored, should be provided with numbered "Requisition Books." These "Requisition Books" are made up in triplicate and every employee requiring equipment, materials, supplies, or miscellaneous services from the storehouse or other issuing departments should be instructed to make out all three copies—using carbon paper —and place thereon the particular account number to which the articles or services are to be charged. All three copies should then be sent to the storehouse clerk, who should refuse to honor any requisition not bearing an account number. As a matter of fact the account number given may be a wrong one (which may happen during the first few days after the system is installed), for the storehouse clerk can not be supposed to know all the account numbers in use on the project, as he is interested merely in those assigned to the storehouse, but he must insist upon a number being given. The project office, to which a copy of the requisition will finally go, will readily detect any error in the number given.

If the storehouse clerk has the stock on hand, he should fill the "Requisition," give himself credit on his "Bin Cards," insert prices on all three copies, and have the person receiving the goods receipt for them. He should then return the yellow or triplicate copy to the person who receives the goods, retain the pink, or duplicate, copy for his own protection, and at the end of the day's business forward the white or original copy to the project office. This white copy will be used by the bookkeeper in distributing costs. Should the storehouse clerk fail to have the material on hand, he

should note on the face of the requisition, "not in stock," or "will order," and return it, sending a "Request for Purchase" on the purchasing agent. This should be made out in duplicate, the white or original request should be sent to the purchasing agent, and the yellow or duplicate copy should be kept for his own files as a "follow up."

Immediately on the receipt at the project office of the "Request for Purchase," "Advertisements," which should be numbered consecutively, in order to be readily referred to, should be sent out in duplicate to the firms who are expected to compete for the business, using the "Request for Proposals" Form, and on their return the order should be given to the lowest bidder. A copy should be sent to postmasters or others who may be asked to give publicity to an "Advertisement," using the "Request to Post Advertisement" Form.

When "Advertisements" are sent to dealers located in the same town as the project office, two of the forms mentioned above need not, of course, be used. The purchase order number should be inserted when the order is given, and complete copies of the order should be kept in the purchasing office and the storehouse clerk and forwarding agent should also receive copies.

A copy of the "Advertisement" should be kept in the purchasing office, and to this copy should be attached the "Purchasing Agent's Card," showing number of advertisement, names of the firms to whom sent, where posted, and date on which bids are to be opened, etc. These should then be filed alphabetically in a cabinet marked "Request for Bids."

As a general rule the award should be made to the lowest bidder on the whole amount. There would, of course, be exceptions to this rule, as in the case of a firm that bids on an inferior article, or of one that has not all the material in

stock, etc., but generally it is advantageous to consider a bid as a whole, as in this way wholesale prices are generally obtained on large orders, which would not be the case were the bids considered item by item. When the bid is awarded, the total quotations of the various firms that submitted bids should be added to the card above mentioned, together with the name of the successful bidder, order number, etc., so that a glance at the card will give all the essential information. Unsuccessful bidders should be notified as to the disposition of the order on "Notice to Unsuccessful Bidders" Form, while the awarding of the order should be made through the "Purchase Order" Form.

After the order has been given, and the unsuccessful bidders notified, the "Advertisement" should be taken from the "Request for Bids" cabinet, and indexed alphabetically and filed numerically, so that the purchasing agent can at any time find an "Advertisement" placed months before, or find every "Advertisement" ever issued for a given article. Such a file of advertisements should prove of great value as a time-saver in preparing vouchers, and in ascertaining previous prices, and should aid the purchasing agent in various other ways.

These advertisements should be used largely in keeping a record of when the goods are received, etc., so that they really become an important part of the general office records, and the simple method of filing above outlined is so complete that there should be little or no chance of an advertisement being mislaid or a part of a record lost.

The copy of the "Request for Purchase" and "Purchase Order" should finally be filed together. The "Purchase Order" number should be used as an index, but prior to awarding the bid the "Request for Purchase" should be placed with the "Purchasing Agent's Card."

When an order is placed, one of the copies of the ac-

cepted "Advertisement" should be sent to the successful bidder, and he should be instructed to return it with his invoice for the material, the other copy should be retained for office reference.

Each project office should insist that invoices be rendered in duplicate, the original copy being for the office of the project engineer and the duplicate going to the storehouse clerk. The storehouse clerk should send to the project office each day a list, showing amounts, etc., of such invoices as he may have received. If the project office has on hand any original invoices, in its invoice file, covered by the storehouse clerk's list, it should send them to him, where they will be stamped with the storehouse clerk's "Shipment Receipt Stamp," showing condition of shipment, shortage, etc. On receipt of the original invoice at the project office, it should be entered by the bookkeeper in the "Personal Ledger," where a separate account should be kept with each firm, and then it should be passed to the purchasing agent to be vouchered. The storehouse clerk should keep his duplicate invoice, after stamping it properly, for his own files.

The purchasing agent should, under no circumstances, make out a voucher for an account not bearing the storehouse clerk's stamp. He should also note carefully any remarks on invoices as to conditions of shipment, shortage, etc., in order to have goods replaced or deductions made.

The invoice should then be filed and the vouchers sent out for signature. On the return of the vouchers, the prices and extensions should be checked by the purchasing agent, who, in order to show how the account was vouchered, may stamp the invoice in the following manner, for the information of the bookkeeper, who keeps the "Personal Ledger:"

Original, ...
Ent. Ledger Acct. .....
Received as billed .....
Vouchered, $.....
Charged as vouchered .....
Entered as vouchered .....

The use of this stamp is not obligatory, but on large projects, where many accounts are handled, its use will be found of great advantage. It can be had on requisition to the office of the Chief Engineer.

The voucher should then be passed to the bookkeeper, who should make classification of the articles purchased as per charge sheets, note the same on the back of the office copy of the voucher by using the "Charge Sheet Distribution Stamp," attach charge sheet, number it in consecutive order, and list it in the voucher register, charging the account to the special fiscal agent, to whom it should be sent for payment.

A copy of the accepted proposal, with the abstract on the back property filled out, should be made for the file and reference of the special fiscal agent, while the copy returned by the payee should be transmitted to the office of the Chief Engineer with the vouchers, as well as one of the copies of the proposals of the unsuccessful bidders. In this way a complete record of each bid is retained for office reference.

After the voucher has been paid the office copy should be returned by the special fiscal agent to the bookkeeper. This copy will show date of payment, check number, etc. The amount as paid should be entered in the personal ledger and the voucher filed. This system ought to fix responsibility at any time for delays in ordering, receiving, or paying for goods, and any shortage ought to be readily detected.

Requisition book (*Form* 7-590).—Instructions as follows:

1. Number all requisition blanks with a numbering machine, in triplicate and consecutively, and issue to all engineers, superintendents, foremen, and others who have authority to make requisitions on storehouses or other issuing departments.

2. Make all requisitions in triplicate, using carbon paper for yellow and pink copies. The person making requisition should place the account numbers to which supplies or materials are to be applied opposite the items relating to such supplies or materials; if the entire requisition requires the use of but one account number, bracket the items and insert number but once. Fill in the blank spaces for date, project, project feature, quantity wanted, articles, and shipping directions, and affix signature, and title.

3. Send all three copies to the storehouse. The storehouse will fill in the spaces provided for quantity furnished, unit price, and total, and will foot requisition. The person receiving the goods will sign in the space for that purpose, giving title.

4. The storehouse clerk will return the yellow (or triplicate) copy to the person bringing the requisition; he will retain the duplicate (or pink) copy for his files; and, at the end of each day's business, will forward the original (or white) copy to the project office.

5. The office will charge the requisitions in the storehouse classification book according to account numbers, so that a daily distribution may be made.

6. The property inspector will also use the requisition to credit the storehouse and debit the particular feature of the project receiving equipment.

7. When storehouse clerks, or clerks in charge of other issuing departments, receive requisitions that cannot be filled because of shortage in stock or other sufficient reason, they will mark on the requisition, "Not in stock; will order," and return the requisition to person making it. Should some of the articles be on hand, such part of the requisition may be filled, in this case the other items should be canceled and notation made as above. New requisitions should then be made for the articles not furnished, if still required, the storehouse clerk filling out the requisition and signing it for the engineer, foreman, or superintendent who originally made it. Cross reference by numbers should be made to the first requisition. The

unfilled requisition should be filed on a spindle until the transaction is completed.

Request for purchase (*Form* 7-584).—Instructions as follows:

Number blanks consecutively and in duplicate, and issue to storehouse clerks and other clerks of issuing departments, after filling in the blank spaces provided for project name with a rubber stamp. When clerks of such departments receive requisitions which they are unable to fill on account of depleted stock, or for other good cause, they will write out a duplicate request for purchase on the purchasing agent, using carbon copy for impression; they will send the white (or original) copy to that officer, and keep the yellow or duplicate copy, on a spindle until copy of purchase order is received from the purchasing agent covering the particular request for purchase. Until the copy of the purchase order is received by the storehouse clerk, he will use his file of requests for purchase as memoranda with which to follow up such requests. When purchase order is placed, both the purchasing agent and the storehouse clerk will file their copies of their requests for purchase, with the copies of purchase order.

Request for proposals (*Form* 7-581).—Self-explanatory.

Advertisement (*Form* 9-524).—Instructions on back.

Advertisement, supplement (*Form* 9-525).—Self-explanatory.

Emergency quotation (*Form* 9-526).—Self-explanatory.

Subsistence supplies quotation (*Form* 9-525*a*).—Self-explanatory.

Request to post advertisement (*Form* 7-583).—Self-explanatory.

Purchasing agent's record card (*Form* 7-606.—Instructions on back.

Purchase order (*Form* 7-589).—Instructions as follows:

Make out the Purchase Order in triplicate—one copy for the merchant, one for the storehouse clerk, and one for the project office. If a forwarding agent is employed on the project, a fourth

copy should be sent to him. All parties concerned in the transaction are thus enabled to keep a lookout for the shipment, and hurry it through to destination. The several copies of the order are then placed on an unfilled order spindle, and when the goods have been received the request for purchase, copy of purchase order, proposal or quotation and invoice are filed together.

Notice to unsuccessful bidders (*Form* 7-582).—Self-explanatory.

Letter transmitting vouchers (*Form* 9-027r).—Self-explanatory.

Contract claim (*Form* 7-545).—Self-explanatory.

Release on contract (*Form* 7-292).—Self-explanatory.

Miscellaneous claim (*Form* 9-546).—Self-explanatory.

Contract (*Form* 9-523).—Instructions on back.

Contract short form (*Form* 7-523*A*).—Instructions on back.

TRANSPORTATION.

The work of the transportation clerk should include the handling of all matters pertaining to bills of lading, transportation requests, and local transportation. The transportation clerk should familiarize himself with memoranda on transportation matters issued by the office of the Chief Engineer.

Project engineers and others who have to do with the ordering of supplies and the shipping of freight should communicate with the transportation office at Chicago, in order that the lowest rates and best facilities may be secured.

A great saving to the service may be effected by allowing the transportation office to route material, as there may be cases of emergency shipments, when there is not time to communicate with the transportation office. All persons who have to do with ordering and shipping of supplies should familiarize themselves with the routes granting the larger concessions to the Service. The transportation office should be

asked to furnish a list of the roads granting such concessions and any other information that may be desired for a better understanding of transportation matters, but, in the main, all questions of this nature should be referred to the transportation office, which was established primarily for this purpose.

Bills of lading to cover express and freight shipments should accompany all purchase orders, except when shipment is ordered by mail or order is placed f. o. b. point of destination, and the purchase order should carry with it explicit directions as to the manner of handling these papers.

The stub records of all bills of lading accomplished or issued should be made as complete in every detail as possible, and should contain the following information: Names of consignor, consignee, shipping point, and destination, weight, car numbers, weight of each car, and an accurate description of the nature of the contents. As debit notices refer to bill of lading numbers only, much correspondence on freight charges may be avoided by keeping an accurate stub record. A supply of bills of lading records (form 9-572) has been sent to all project offices for recording all accomplished bills of lading that were not taken from the book in use at the project office, as for instance, shipments of supplies from the office of the Chief Engineer.

The bill of lading now in use by the Service is not entirely satisfactory, and its modification is contemplated when the Government adopts a uniform bill of lading for all departments.

As the stubs of bills of lading books are permanent records they should be retained in the project offices until the office is abandoned, when they should be forwarded to the office of the Chief Engineer.

When practicable all shipments should be inspected before the bill of lading is signed by the consignee. Any dam-

age to the shipment should be noted and the delivering agent should be required to acknowledge same over his signature on the bill of lading, and on the copy of expense bill to be referred to hereafter.

For every accomplished bill of lading delivered to the agent at destination for the delivery of a shipment the project office should secure the duplicate receipt of the agent on form 9-535, which should show all the information of the regular expense bill, including the charges as way-billed.

The amount of such charges may be used as the basis of a liability-entry for the freight and a charge against the articles—material, supplies, or equipment—on which it was incurred. A copy of the expense bill should then be sent to the office of the Chief Engineer to be held as a record of the liability until the receipt of the railroad company's bill for the transportation.

When bills of lading are used for shipments to a person outside the Service, blank copies of this expense bill form should be sent the consignee, with instructions to secure the data and receipt in duplicate, and to return them to the consignor for record and transmittal to the office of the Chief Engineer, and for project office reference.

It is most important that these expense bills be used, as they show or should show the complete history of every shipment. The receipted expense bill enables the project office to prove that a bill of lading was delivered to the railroad company, and is an aid in avoiding disputes with railroad companies regarding rates, weights, etc.

In the case of contractors' shipments, one copy of the expense bill should be kept in the project office, and the other forwarded to the transportation office at Chicago.

No card index will be necessary in handling freight and express transactions at the various project offices, the stub

of the bill of lading and the expense bills filling all necessary requirements.

All transportation requests issued to or used by the project offices should be recorded on form 6-520.

The coupons of all transportation requests should pass through the transportation clerk in order that the distributed charges may be recorded on the coupon in transportation request books (form 6-520), as reference will be made by number only when sending debit notices to project offices from the office of the Chief Engineer.

FORMS USED BY TRANSPORTATION CLERKS AND OTHERS.

Bill of lading (*Form* 9-562).—Instructions on back.
Copy of expense bill (*Form* 9-535).—Instructions on back.
Request to return bills of lading (*Form* 7-605).—Self-explanatory.
Transportation request card (*Form* 9-528).—Self-explanatory.
Bill of lading card (*Form* 9-572).—Self-explanatory.
Transportation request.—Self-explanatory.

STOREHOUSES.

At the storehouses on the project may be kept such equipment, material, or supplies as may be needed from time to time. All small articles should be placed in bins or on shelves or racks, and large articles should be piled so as to occupy as little floor space as possible. Iron, pipe, cord wood, lumber, and bulky material that the weather will not affect may be placed in racks or piles out of doors, but near the storehouse when possible. The storehouse should be located as near the project office as possible, and should be large enough to properly handle articles to be issued later. As a rule, supplies should be kept in one building and not

scattered in various houses over the project. The building should be equipped with scales, desk, etc., and generally it would be best to have the storehouse clerk, who will have charge of the storehouse occupy a room in it as sleeping quarters.

Such articles as it would be impracticable to keep in stock (large pieces of machinery, etc.) need not be hauled to the storehouse for distribution, but in theory, at least, everything should go through the storehouse. The foreman for a particular feature should receive the article for the storehouse clerk, and should send in a requisition for it, the storehouse clerk at once making entries showing receipt and issue. In order, however, that the storehouse clerks' accounts may check, care should always be taken that none of these transactions appear on his cards unless the requisition is also considered, for later on, much trouble may be caused in order to find the discrepancy.

The storehouse clerk should be required to care for such supplies or equipment as may be placed in his keeping. The stock should be frequently checked against the inventory account kept in the office, in order to see that its value equals the total of that account, less any reasonable shrinkage or leakage. The clerk should be held financially responsible for shortage in his stock. He should see that he does not run out of articles that should be kept in stock, and that his stock is not allowed to become depleted by filling unnecessarily large requisitions. He should keep an ordinary blotter to record such articles as will soon be needed, and once every few days a "Request for Purchase" should be made out from this memoranda, from a general survey of the stock in the storehouse, or from reference to the "Bin Cards." This "Request for Purchase" should be sent to the purchasing agent, as explained under the heading "Tracing a Purchase and Requisition"

Frequently articles may be needed from the storehouse to meet a sudden emergency. In such cases the person requiring the article or articles may transmit the requisition by telephone (should the project use one), and confirming it later, or he may authorize the storehouse clerk to make out a requisition in the name of the engineer, superintendent, or other person desiring the articles. The clerk should state on the requisition the particular emergency to be met, and should initial the form.

All engineers, superintendents, and others should be careful to anticipate what may be required on their particular features, in order that the stock in the storehouse may not run low and work may not be delayed on account of lack of material.

The stocking up of a storehouse generally saves the making up of a large number of vouchers for small amounts and insures the purchase of material and supplies at cheaper prices, because larger quantities are ordered. It also saves many trips to the nearest market to obtain small quantities of supplies, thereby decreasing the expense, as well as the clerical work.

The storehouse clerk should use the storehouse clerk's "Shipment Receipt Stamp" on all invoices. It reads:

Shipment Received.
Condition Good—Except as noted.
(Date.)
Freight charges $..... .....

.....
Storehouse Clerk.

The purchasing agent should not voucher an invoice unless it bears this stamp and the signature of the storehouse clerk, and the latter should be careful to note any and all exceptions. Any shortage discovered should be deducted

plus an amount for railroad, local, or other freight charges.

In using the "Bin Card," the storehouse clerk should exercise care to see that all goods are issued at the old invoice price before taking up a new invoice price for later purchases.

On small projects, where a storehouse clerk occupies desk space in the office building, and only goes to the storehouse to fill an occasional requisition, it may be well for him to keep his bin cards on his desk, thus obviating the necessity for making frequent trips to the storehouse in order to consult his cards in order to determine the balance of his stock.

For the transportation of passengers on stage lines the "Local Bill of Lading" may be used when necessary, as directed by the instructions for the form. This form need not be used, however, when a shipment is covered by a filled requisition emanating from a particular feature, a copy of which the teamster should have with his load.

FORMS USED BY STOREHOUSE CLERK AND OTHERS.

Bin card (*Form* 7-587).—Instructions as follows:

These cards are to be issued to storehouses, mercantile stores, or other issuing departments.

Upon the basis of a complete inventory, these employees will carry an account on the cards with each article in stock, by class, number, and size of such articles.

The blank space marked "Unit" is for the insertion of the unit of measure—pounds, gallons, feet, etc.

The spaces marked "Maximum," "Minimum," and "Usual Purchase" are intended as a guide to the clerk, that he may not keep in stock more or less of the particular article than is required or necessary, and to aid him when making his requisition for purchases when replenishing his stock.

On the debit side the space left for date is for the date of the receipt.

The order number is obtained from the copy of the purchase

order received from the purchasing agent, and the quantity from either the invoice, local bill of lading, or any transfer of equipment to the storehouse from some other project feature.

Freight, wagon hauling, and handling are a part of the cost of all articles purchased. Whenever these costs can be ascertained at the time of receiving the articles, such expense should be included in the invoice price, and considered in determining the unit price for issues. For the miscellaneous articles on which it is not practicable to determine such expense at the time of receipt, a fixed proportion should be added to invoice price to cover these charges.

On the credit side of the card the date is for the date of issue.

The requisition number is taken from the requisition itself and the quantity is for the amount issued.

As each issue is made, the balance of the article on hand is noted in the column provided for that purpose.

The cards are to be kept in their respective holders, and either in or near the bin containing the article to be issued.

There will almost always be some articles for which it will be impracticable to keep bin cards with the articles themselves, as in the case of lumber in open piles, wood, coal, rails, hay in stacks, etc. For such articles the cards may be kept in a tray upon the storehouse clerk's desk, but experience has shown that *bin cards should be kept with the articles in every case where practicable.*

When one side of the card has been filled, the other side should be used, and when both sides have been used, the balance should be carried to a new card and the old card carefully filed for future reference.

If an article has been received at a certain invoice price, it should be issued at that price until the old stock is exhausted, when a new price may be used, if a later invoice shows a change to be necessary.

In the case of mercantile stores, which are to be sold, the invoice price, plus freight and handling, and a reasonable amount of profit should be added, in order to arrive at a basis for unit price.

Stock ledger card (*Form* 7-588).—Instructions as follows:

These cards are to be issued to storehouses, mercantile stores, or other issuing departments.

Upon the basis of a complete inventory enter under the proper date the total money value of the property with which the storehouse

is charged. At the end of each day enter the total number of invoices received, and the total valuation of such invoices for that day's business.

Returns of equipment and supplies should be treated as invoices, and their money value should also be taken up on this card under the correct date.

Also enter with invoices of articles received, the charges for freights, wagon hauling, etc., as explained in the instructions for use of the bin card.

Under the caption "issued" enter the total number of requisitions filled, and the valuation of issues. The balance represents the money value of the stock on hand.

When one side of the card has been filled, use the other side, and when both sides have been used, carry the balance forward to a new card, and file the old card for future reference. Keep the current card in its holder on or near the desk.

Local bill of lading (*Form* 7-585).—Instructions as follows:

Number all blanks with a numbering machine in triplicate and consecutively, and issue to engineers, superintendents, and foremen, purchasing agents, forwarding agents, and others who may ship supplies and equipment by wagon or stage from railroad point to project works. The blank spaces for name of project may be filled in with rubber stamp. Forwarding agents and others making shipments will fill in these blanks in triplicate, retaining the triplicate, or yellow copy, for their protection, and place the white and pink copies in an envelope, which is then sealed and handed to the teamster. When the shipment is brought to the storehouse or destination, the storehouse clerk will open the envelope and check against the load. If the load checks, he will stamp on both the white and pink copies the invoice receipt stamp, showing that the goods have been received in good order; the pink or duplicate copy is given to the teamster to be sent in with his bill at the end of the month; and the white or original copy is sent to the office, where at the end of the month it is used to check the teamster's bill. If, however, a shortage in the load is discovered, the storehouse clerk will make note on both copies of the extent of the shortage, and price, receipting for the balance of the shipment. This shortage the office will either have replaced by the teamster, or the money valuation deducted from the teamster's bill.

This form of local bill of lading is available both where the hauling is done by outsiders at a given rate per cwt., per cord, or per load, etc., and also where the hauling is done by an employee who is paid at a per diem or monthly rate. Its purpose is to determine the responsibility of the teamster in both cases, and in the former to also show the amount earned.

CORRALS.

Corrals to which are issued supplies such as hay and grain, to be fed to animals working on several features of the project, may be treated as part of the storehouse, and may be termed Distributing corrals. Such corrals should issue, on requisition only, any feed for animals not fed at this corral, and employed on features at distant points. This requisition should be handled in accordance with the instructions given in the Requisition Book. When the corral is located near the storehouses, the requisition may be sent to the storehouse instead of to the corral direct, the storehouse clerk approving the requisition and passing it on to the corral foreman to be filled. The corral foreman will have complete charge of his corral and of such teamsters as keep their horses there. He will report to the chief clerk or to the storehouse clerk the number of animals fed during the month, and the number of feeds, keeping horses and mules separately—the amount of hay and grain used and issued during the month, number of horse days, idle time horse days, and balance of feed—in tons or pounds—on hand at the end of the month. He will also report the amount of hay and grain received during the month. Prices will be inserted at the office.

As in the case of the mess houses, the office will make out a comparative statement covering all corrals showing cost of forage at end of a given month, receipts, and issues during the month, balance on hand at the end of the month,

amount consumed, horse days, and cost per horse day, these same figures plus corral labor and cost per horse day, and all figures plus corral supplies (medicines, grease, etc.), and total cost per horse per day. (*See* Monthly feature reports.) These reports should be sent out to all foremen. As a rule, the office will add the freight charges for all articles, if these have not already been added to the invoice price when forage was issued to the corral.

As the charges for maintenance, feed, repairs, salaries of foremen and helpers, freight and handling, are recorded in the office, it only remains to divide the number of horse days into the total monthly cost to find the cost per horse day. The corral charge for each feature is obtained by multiplying the cost of each horse day by the number of horses used on that feature. The timekeeper must charge to each feature direct the wages of the teamster working on that feature.

Corrals that do not distribute charges should be handled in practically the same manner as distributing corrals, but they will not issue forage on requisition, unless they receive enough visiting animals from other projects to warrant the making out of requisitions to cover charges for feeding. In such a case, requisitions should be made out so that the particular feature may receive credit at the project office, and the proper feature may be debited.

EQUIPMENT.

Equipment includes all machinery, tools, implements, vehicles, animals, instruments, furniture, utensils, etc., that are used on the project and that do not enter into the permanent construction, like materials, nor are consumed in various operations, as repairs, except as to wear and tear. The accountability for all such equipment will rest with the

various project offices, the office of the Chief Engineer being interested only in the money valuation of the balance on hand.

The office of the Chief Engineer will keep its own equipment records and will be treated in the same manner as any project office, and handle its accounts independently. The plan described in the foregoing pages provides that every voucher for the purchase of any equipment, material, supplies, etc., may be traced back to the original invoice and purchase order on and to the original requisition on which it was issued from the storehouse. The storehouse and inventory accounts should show receipts and issues of all articles handled. The equipment records should be kept in the same manner, and should show the amount, value, and distribution of all equipment with which the project is charged. Such accounts should be kept in the equipment record by the property inspector, who should have responsible charge of them and of all matters pertaining to equipment. The accounts with each article of equipment should be arranged alphabetically, as should all intermediate or subsidiary papers.

The equipment record (form 7-604) should be used in accordance with the following instructions:

The property inspector should use this form in keeping a complete record of the equipment with which his project is chargeable.

A sufficient number of sheets in the front portion of the binder should be inserted for the handling of the accounts for each feature, camp, or party of the project, and in the back of the binder leaves should be reserved for controlling accounts to cover the project equipment accountability. These two sets of accounts should always be in balance.

The storehouse and mercantile store should be considered as project features.

Number the pages, when practicable, and fill in the spaces provided for "Project," "Feature," "Article," "Class, number, or size,"

and "Responsible." When handling the project equipment accountability records, the space for "Feature" and "Responsible" need not be filled in.

Upon the basis of an inventory, which should be taken before opening the books, open an account on the debit side with each article of equipment distributed over the project, by features, camps, or parties, inserting the date of taking the inventory.

"Voucher No." has reference to the number of the particular purchase order, transfer of equipment, or requisition covering a manufactured article, and all such papers, as they come into the project office, should be referred to the property inspector for his information, and in order to allow him to keep his records up to date, he initialing the same when their contents have been noted. The space for "Name of Voucher" is for the insertion of the names of these forms. Fill in spaces for "Quantity" and "Value."

On the credit side of the accounts with each article, all features, camps, or parties should be credited with any articles transferred, worn out, lost, or sold, filling in spaces for "Date," "Name of Voucher," "Quantity," and "Value." "Voucher No." is intended to cover transfer of equipment, equipment inspection report, affidavit, or auction sales report.

The "On hand" column is for "Quantity" and "Value" of balance.

The controlling accounts for project equipment accountability should be handled in precisely the same manner as are the feature accounts.

These two sets of accounts should be kept absolutely up to date, and as the information affecting the equipment records reaches the property inspector it should at once be entered on the books. This is imperative in order that engineers, superintendents, foremen, and others concerned may be able to locate any article or class of articles without delay, so that the availability of certain equipment for transfer to other projects or project features, to meet certain emergencies, may at once be determined.

When accounts with certain features, camps, or parties die or become inactive, they may be taken from the binder and filed for future reference.

The equipment record should account for all such articles as power developers, stationary engines, boilers, gas engines, water motors, electric generators and motors, ma-

chinery, locomotives, cars, tracks, cableways, skips, forges, graders, scrapers, plows, harness, instruments, office appliances, furniture, tents, etc. The equipment record should be a perpetual inventory, and should be kept up to date in every particular, and in order that this may be done, the property inspector should take frequent inspection trips to the various project features, checking up equipment on hand, arranging for the condemnation of worn out and worthless implements, or the sale or transfer of other equipment. Foremen and other heads of parties should be required to give a strict accounting of such property as may be missing, and should a shortage be noted, be required to make good any such shortage, if it is the result of carelessness or neglect in carrying out instructions.

The property inspector should also see that equipment is properly cared for, and not allowed to be unduly exposed to the weather or abused in any way.

In order that the property inspector may keep his records up to date, he should be required to check and initial every paper recording transactions in equipment, including receipted invoices, requisitions, or transfers of equipment coming from the storehouse or other issuing department to the office.

All public property, when practicable, should be branded, and it is generally advisable to open a book showing hoof and body brands, color, age, etc., of animals, make and size of wagons, etc., so that later on, should occasion require it, such property could be identified in case of loss or theft.

A uniform badge has been adopted for the use of the property inspector, which he should wear, and which may be had on requisition to the office of the Chief Engineer. On large projects covering a great deal of territory, this badge will be found very useful, especially when the inspector visits camps where he is unknown to the foreman.

and some doubt may exist as to his authority to make an inspection. The equipment inspection report (form 7-592) should be used when making an inspection. Instruction for the use of same is printed on its back.

It will be unnecessary for foremen and others to return to the storehouse articles that they may consider to be worn out or worthless. Such articles should be collected and kept in a pile until the inspector makes his rounds. After the inspector has looked over the property in a particular camp he should complete his inspection report and sign it in duplicate, having the engineer, foreman, or other responsible person in charge of the camp sign also and affix his title. Requisitions or transfers should also be made out by the person in charge of the feature in order to adjust any discrepancies.

In case certain articles are found that are of no service to the government, but would probably warrant the cost of a sale, they should be transferred to the storehouse and kept in a separate place and later sold.

If any articles have been destroyed by the inspector, he should have the engineer, superintendent, or foreman of the feature or camp make out a certificate as to loss, destruction, or other disposition of equipment (form 7-615—instructions on back), in duplicate, one copy being kept by the party chief, and the other retained by the inspector for his protection, and for use in adjusting his records. Instructions concerning the use of this form are printed on its back.

The instructions below should be followed in regard to the transfer of equipment (form 7-586):

Number all blanks with a numbering machine in triplicate and consecutively, and issue to the engineers, superintendents, and foremen, and others who have charge of parties, or who may have property or equipment to transfer from one feature of a project to another from time to time.

The blank spaces provided for the insertion of the name of project may be filled in with rubber stamp.

These books are intended primarily to be used in the transfer of equipment only, but they may be used for transferring supplies and other property when necessary. The party desiring the use of the equipment to be transferred will make out the transfer request in triplicate, using carbon sheet for impression, and sign his name and title. The party receiving the equipment for the requisitionor should affix his signature and title. The party issuing the equipment should retain in his possession the white, or original copy, return to the requisitionor the pink, or duplicate copy, and forward to the project office, at once, the yellow, or triplicate copy. The project office will make the proper debits and credits, that office inserting prices.

In turning over equipment to the property inspector or storehouse, on the completion of certain work, these blanks should be used. *Engineers, superintendents, foremen, and others, should be informed that unless this form is used in the transfer of equipment, no credit on the books will be given to parties loaning or transferring.*

When a sufficient amount of worn-out or useless equipment has been accumulated to warrant the holding of a sale, the project or supervising engineer, at the instance of the property inspector, should appoint a board of survey. One of the board should be the property inspector. Form 7-613 (report of survey) should be used in connection with the appointment of such a board, and the same form should be used for their report. Instructions covering the use of this form are printed on its back.

It is not at all necessary that equipment should be sold at auction in every instance. It may be sold on sealed bids invited from all persons likely to compete, or at private sale, when there is no possibility of securing competition and this condition is shown.

The inspection of equipment should be given every care and thought, and property should not be sold which, with

a reasonable amount of repairing, might do service for a number of years. Five individual wagons, for instance, might be unserviceable, but if dissembled and the serviceable portions of each assembled, make one or more serviceable vehicles.

Equipment should be classified, sorted in lots, and so arranged at its sale as to show off to advantage to the prospective buyer.

As a rule the services of an auctioneer should be procured when an auction sale is contemplated, as the employment of a man whose business it is to conduct such sales tends to increase the prices received. His expenses may be paid out of the gross receipts of the sale, a sub-voucher being taken therefor. However, a member of the service may be detailed by the project engineer to act in this capacity when necessary.

In submitting a report of sale to the office of the Chief Engineer, a copy of the report of survey and of an order from the project or supervising engineer to some person—preferably the purchasing agent or storehouse clerk—to conduct such a sale by auction, on sealed bids or at private sale, covering equipment as per report of survey of a given date, should accompany such a report.

This report should also show place, date, and kind of sale. If the sale was conducted privately, the reasons for holding it in this manner should be stated, and also the number of advertisements sent out and posted, the number of proposals received in reply and an abstract of same. A list arranged alphabetically should also be furnished, showing articles sold, names and addresses of purchasers, prices received, and gross amounts.

Below the expense of holding the sale should be stated the balance and the remittance sent with report.

An auction sale notice may be required; and if so, one may be printed locally. Such a notice may be as follows:

PUBLIC AUCTION.

To be sold at Public Auction—

Public Animals
and Material.

The property of the U. S. Reclamation Service, as follows:

(Here follows listing of articles.)

Sale to take place at ——— ———.

Terms: Cash on delivery of the property.

By order of the Supervising Engineer, ——— Project, U. S. Reclamation Service.

Signature, ——— ———.

Title, ——— ———.

All animals and property sold should be branded or marked "I. C."—the initials for Inspected and Condemned.

STATIONERY.

Stationery should be received and issued on requisition, and should be handled in the same manner as the material described under the heading "Storehouses." On projects where the office and storehouse are not far apart, it may be convenient to have the storehouse receive and issue stationery. In other cases it should be in the charge of a Stationery Clerk.

Requisitions on the office of the Chief Engineer should be given a purchase order number, and be handled in the same manner as an order on any firm. When the Stationery Clerk has reason to think that the office of the Chief Engineer will ship material by mail, but two copies of the order need be made out—one going to the office of the Chief Engineer, and the other being filed on an "Unfilled Orders" spindle.

All stationery should be kept under lock and key, and

be stored as far as practicable in one place—care being taken to keep the stock up.

In order to save time it may be a good practice to place on shelves by themselves such articles of stationery as will be in constant demand in the office, and make one issue of them, and thus save time and labor in making frequent entries on the cards. The Stationery Clerk should use good judgment in filling requisitions, and not allow his stock to become depleted on account of the desire of some chief of field party to obtain more of a certain article than is absolutely necessary to cover his needs for a reasonable length of time. (*See also* Storehouses.)

MERCANTILE STORES.

It sometimes becomes necessary on the projects of the Reclamation Service to operate one or more mercantile stores, and to board the men at project mess houses. It is not intended, however, to operate such stores unless it appears to be absolutely necessary, and reliable dealers cannot be induced to locate on or near the project works.

HANDLING OF SUPPLIES AND MATERIAL.

The merchandise kept for sale in the mercantile stores is handled in precisely the same manner as articles kept in Storehouses, and such articles should be checked up once a month.

Requisitions should be made on the storehouses for the articles needed, and the matter handled in the ordinary manner—a copy of the requisition going through the project offices. Requisitions on the mercantile store, however, will not be honored—either cash or coupon being necessary for the purchase of articles thereat.

In case the mercantile store has an oversupply of articles or material on hand, which it cannot dispose of, it can

be transferred to the accounts of the storehouse through the use of the ordinary transfer of equipment form.

SELLING PRICE ON MERCHANDISE.

The prices on all articles placed on sale at the mercantile stores should be high enough to cover purchase price, transportation, handling, wastage, and a fair profit; but local prices on the same articles should be considered, and prices adjusted so as not to be unfair to private merchants.

CREDITS AGAINST ACCRUED WAGES.

In order to provide a safe method for permitting employees to make purchases and to obtain meals on account of wages earned, but not paid, books of coupons, good only at the mercantile stores, and meal tickets, good only at the project mess houses, or good only at contractor's mess houses, have been prepared, and should be issued from time to time to those employees whose earnings are shown by the Employee's Ledger Card as sufficient to warrant such credits. The totals for such charges for meal tickets, coupon books, rent, hospital, badge, or any other articles or services, should be deducted from the accrued wages on the pay roll vouchers already mentioned.

The coupon books are made up for $3, $5, and $10, and brief instructions governing their use are printed on the inside of their covers. Neither the meal tickets nor coupons will be numbered at the office of the Chief Engineer—at least for the present—that being left for the project offices.

The weekly meal ticket is for $5.25 (21 meals), and brief instructions concerning its use are printed on each ticket. The amount, $5.25, has been filled in, as this price conforms more nearly to the general price for which subsistence can be furnished throughout the United States, and in cases where the price is either too high or too low, it can

be changed to suit local conditions when requisitions for such tickets are received at the office of the Chief Engineer.

The transient's meal ticket, 25c, is to be used by visitors, travelers, and others who may desire one or more meals at a project mess house. Simple instructions governing its use are printed on the back, and, as in the case of the meal ticket and the contractor's meal ticket, its price may be changed to meet local conditions.

The contractors' meal ticket is for $5.25 (21 meals), and should be issued to employees who may be subsisted at contractors' camps—the contractor turning in each month with his bill tickets for such meals as he may have furnished. Brief instructions governing their use are also printed on the back of each ticket; and as in the case of the meal ticket, the price may be changed to meet local conditions, on application to the office of the Chief Engineer.

The use of the employees' ledger card (form 7-603) is apparent, but brief instructions governing its use are printed on it.

DEDUCTIONS FROM WAGES OF EMPLOYEES.

Forms of vouchers have been provided for deductions from the earnings of employees—Subsistence pay roll vouchers (9-554, 9-554A, and 554-B) and Pay roll sub-vouchers (9-539A and 9-539B). Instructions concerning the use of these forms are printed on the back of form 9-539.

CHECKS ON ISSUE OF CREDITS.

Meal tickets and coupon books, as already stated, are to be issued only by the bookkeeper when an employee's accrued wages warrant such a credit. The bookkeeper is charged with a supply of coupon books and meal tickets, issued from the office of the Chief Engineer, and credits his account as they are issued to employees. He is at all times

accountable for the unissued coupon books and meal tickets. A monthly statement should be submitted to the Chief Engineer, showing the value of the tickets and books outstanding at the end of the last previous month, and the value of the issues during the current month; also the value of the tickets and coupons received for meals and sales during the current month, and the value of the tickets and books outstanding at the end of the current month. (*See* Statement—Operations of Mercantile Stores and Mess Houses: Form 7-612.)

Brief instructions governing its use will be found on its back.

CHECKS ON STOREKEEPER.

In order to secure a sufficiently accurate check on the storekeeper and his clerks, cash registers have been purchased. These are fully described as follows:

Style of cash register for use in mercantile stores.

Class of Articles.	Dollars.	Dollars.	Cents.	Cents and Clerks
O-Groceries	O-90	O-9	O-90	O-5A
O-Meats	O-80	O-8	O-80	O-5B
O-Tobacco	O-70	O-7	O-70	O-5D
O-Shoes	O-60	O-6	O-60	O-5E
O-Clothing	O-50	O-5	O-50	
O-X-Miscellaneous	O-40	O-4	O-40	O-A
O-Coupons	O-30	O-3	O-30	O-B
O-R. on Account	O-20	O-2	O-20	O-D
O-Charge	O-10	O-1	O-10	O-E

This cash register makes the following records:

1. Amount of sale for any amount divisible by five cents from $0.05 to $99.95.
2. Letter indicating which of four salesmen made the sale.
3. Character of article sold in one of six classes, viz.:
   "Gr"—Indicating staple groceries;

"Tb"—Indicating tobacco in its various forms;
"Mt"—Indicating meat, butter, eggs, etc.;
"Sh"—Indicating shoes and boots;
"Cl"—Indicating clothing;
"X"—Indicating miscellaneous purchases not belonging to any of the previous classes, such as toilet articles, stationery, etc.

4. Character of payment received, whether cash (to be remitted to office of Chief Engineer), or coupons charged against and deducted from the wages of the employee on the regular pay roll.

5. For each sale it is necessary to register price, character of article, and salesman to open cash drawer. When so registered, a cash sale is recorded. For a coupon sale, the coupon key must be used in addition to the above three requirements. The register prints:

(a) A slip for the customer showing all the history of the sale as above.

(b) A record on a continuous strip, inaccessible to the salesman, but obtainable by the chief clerk of the office, which is a check against the daily sales and which is turned in to the project office.

6. The register also shows the total number of transactions and the number of times the adding machine has been turned back to zero.

HANDLING CASH.

In order to reduce to a minimum the possibility of loss through the handling of cash, the system of credit against accrued wages which has been described should be encouraged. It is not possible, however, to entirely eliminate cash transactions. Credits can be given only to such employees as have wages earned and unpaid, and at times it is necessary that sales should be made to persons not directly on the pay roll of the project—as to employees of a contractor, or to engineers of the Service, temporarily on the work. It has accordingly been decided that all such receipts shall be transmitted monthly to the office of the Chief Engineer, and that with such remittance there should be a statement of

the operations of the stores and mess houses during the month. Statement—Issue and redemption of coupon books and meal tickets (form 7-611) should be used for the purpose; instructions governing its use will be found on its back.

MESS HOUSES.

Project engineers maintaining one or more mess houses should, when the mess is large enough, place it in the charge of a steward, who will make requisitions on the storehouse through the chief clerk. The steward should look after all details in connection with the operation of the mess, punch meal tickets of employees, report the number of meals served, make out inventories at the end of each month, showing the amount of supplies and material on hand, and attend to any other duties connected with the proper management of a boarding house. As the steward may frequently be called on to furnish the mercantile store with supplies that will then be offered for sale, he should work in conjunction with the mercantile store clerk, and, as a rule, his instructions should come through him.

A complete record should be kept of the meals served at a mess house during the month. In a small mess house which does not use meal tickets this may be done by means of an ordinary time book, but in a large one a recording punch should be used and each man's ticket punched every time he obtains a meal. Such a punch has been adopted for general use, and may be had by requisition on the office of the Chief Engineer. On some projects complaint has been made that an employee may frequently skip one meal and eat at the next the amount ordinarily consumed at two meals. In such cases the intermediate meal should be punched in accordance with the instructions on the back of meal tickets.

It will only require a few lessons of this kind to teach the laborer to take his meals regularly, and admit of the steward keeping a good check on his man days for which food was prepared. A record of the meals served in large mess houses should be furnished the chief clerk each day.

Stewards should see that all supplies and subsistence in each mess house are kept under lock and key. Provisions should be issued by the steward to the cook and no other employee should have access to the stores. The steward should render an inventory statement at the end of each month showing the amount of subsistence and supplies on hand. The prices can be entered at the office from storehouse records. On the basis of an inventory on the first of the month, the issues during the month—which the office will have in its General Classification Book—and an inventory at the end of the month, together with the total number of meals served, a comparative statement for the various mess houses on a project should be made up for the information of the project engineer. (*See also* Monthly feature reports.) Such report should be made out to cover cost per man, per day, for subsistence supplies only, same cost for subsistence supplies and other supplies (including soap, brooms, sapolio, etc.), with these costs, plus freight, and all these costs, plus subsistence labor. A copy of this report should be sent to all mess house stewards or cooks, with letters of inquiry as to the necessity for a large figure at such mess houses as are running high in their costs. If the costs of the various mess houses do not run very close together, there is always some way in which to account for it, and generally it is waste or dishonesty. This report being sent to all mess houses also causes rivalry among stewards, and they become interested themselves in keeping the cost down. The system of accounting and the blank forms therefor are described under the heading "Mercantile Stores."

TIMEKEEPING.

Much time and labor will be saved to the project office by carrying all employees, including monthly and annual men, on time books.

There is probably no class of employees engaged in work connected with accounting whose duties are of more importance than those of the timekeeper. As the element of labor entering into the cost of the project is much greater than the sum of all other costs, the importance of keeping this labor cost in an intelligent and businesslike manner is apparent. Poor timekeepers can cause the loss of more money and the useless expenditure of more time than perhaps any class of employees, and for these reasons care should be taken in selecting them.

The timekeeper should be quick, intelligent, and resourceful, and as well paid as any employee in the project office. Some projects have adopted the plan of using young engineering aids as timekeepers, and such a plan is a most excellent one, as it not only insures the projects having intelligent and educated men to do this class of work, but by constant contact with men and methods tends to educate the young engineer and develop him for more important work later.

The only forms the timekeeper will use are the Time Book (form 7-595) and the General Classification Book (form 7-580). The instructions printed in the time book are as follows:

> Several days prior to the end of the month each project timekeeper should be provided with a sufficient number of time book sheets to use for the party or parties on which he is to keep time for the ensuing month. The timekeeper should number each sheet, fill in the space for the year, month, and feature, and stamp in the name of the project. He should then transfer the names of such men as he has reason to believe will be employed during the

coming month to the columns provided for that purpose, inserting badge number, should the project use one, together with occupation and rate of pay. If the timekeeper has reason to believe that during the month an employee will be engaged on work chargeable to more than four account numbers (the faint line being intended for account numbers), he should allot to that employee more than one space; but, as a rule, one space will be found sufficient for one employee. The account numbers are, of course, not inserted until the employee has been found at work, and each time he changes his duties from work chargeable to one account number to work chargeable to another, the number should be inserted. If the rate of pay of the employee should change during the month, he should be given a time check, paid off at the office, and "T. C.," for time check, written on the line opposite his name. If this is not done, there should be entered on the time book a record of such change in rate, or of transfer to another party or shift, so that the pay roll clerk will have proper cross references for all time included on the pay roll. His name should then be carried to another space on the time book, with a note showing where his time was previously recorded. These initials, "T. C.," are also to be written opposite the names of any employees who may be discharged, or may have resigned. Should the timekeeper make an error in computing the amount of pay for an employee and the error be detected at the office by the pay roll clerk, the pay roll clerk should make the necessary correction on the time check and at once notify the timekeeper, so that he also may correct his book.

The time should be taken on each party at least twice a day, and oftener if possible. The book is designed for taking time four times daily. In order to save time at the end of the month, and to prevent unnecessary delays in sending in time books promptly on the last day of the month, the space "Total to ——" should be utilized to insert computations to some date that may prove most convenient to the timekeeper. The columns "Total Time," "Amount Earned," and "Total Due" are to be filled in at the end of the month.

In many small camps where the timekeeper is employed in several capacities, he is in a position to state positively the total number of meals taken, or any other deductions that have accumulated against each employee. This is particularly applicable to camps where meal tickets are not used; in which case the columns for deductions may be used. The timekeeper should then use a few pages of the general classification sheet to draw off all the account num-

bers of all the employees for whom he may have kept time inserting the account numbers at the head of each column, and putting under each heading the amount of expense incurred. The total of these liabilities should equal the total liabilities for labor as shown by the time book. On a blank page in the back of the book there should be inserted this summary of time book by account numbers, as well as a recapitulation of the total liabilities for labor by pages. The total liabilities by account numbers should equal the total liabilities by pages of the time book.

The time of employees who have received time checks will be included in the recapitulation and summary in precisely the same manner as the time of those who have not been paid. When the time book has been found correct, it should be sent to the office promptly, together with the rolls, on the last day of the month, that there may be no delay in paying off the men. *This time book must be taken out to the works; the use of a smaller time book from which daily transfers are to be made to the larger one cannot be permitted.* Engineers, superintendents, foremen, and others should initial each page of the time book before it is sent in to the office for transfer to the pay rolls.

Time of contractor's employees, or "force account," should be collected on separate sheets of the time book, using occupation instead of names, and reporting in one item the number of employees of same occupation engaged upon one class of work.

The time of all work animals should be reported on the time book, similarly to that of employees, observing the following rules:

1. Time of employee and of animals and equipment owned and furnished by him should be reported as one item, with rate.

2. Time of animals and equipment hired separately from driver should be reported separately, using name of owner and rate.

3. Time of animals owned by the Government should be reported as Government animals, working or idle, according to the actual facts, each day.

The method of obtaining the horse day cost of forage, etc., requires this data, and is explained in the instructions regarding corrals.

The time book used on the works is the original book of entry, and *must* become a part of the office records. Should the project be entangled at any time in litigation, this book would be needed in court. A transcript of any

kind would not be considered good evidence. No matter how *soiled* this time book may become, the rolls should be made up from it. The use of a transfer book to transfer time from one book to another may become a fruitful source of error, and presents excellent possibilities to a dishonest man to pad his rolls. Besides, the original book is the one the engineer, superintendent, or foreman will initial. By following the instructions governing the use of the time book, there appears to be no good reason why the timekeeper should have to work overtime in order to keep his records up, unless it be for a few hours when nearing the end of the month.

The timekeeper does not have to know all the numbers in the Project Account Number Classification Book. He is only concerned about the labor items on the particular feature or features on which he is keeping time. He should insert in his time book binder the numbers he is to use. When new numbers are sent him from the office from time to time, or old numbers done away with, he should change his list accordingly. The timekeeper will soon be able to learn and remember his numbers. The first few days after the system has been installed, he will, of course, have difficulty in becoming used to the new order of things, but this will be rapidly overcome.

The timekeeper need not concern himself with the account numbers for material, supplies, etc., unless he has other duties besides that of a timekeeper to attend to. In some small camps a timekeeper may make out requisitions for engineers, foremen, etc., look after mess houses, and the like, but unless he is assigned to work of that character he will handle labor account numbers only.

All account numbers for supplies and materials are handled in the same way as labor at the end of the month, and ultimately are collected, as is all cost data, by the use

of the general classification book.

The time chargeable to a distributing corral would be for the foreman and his assistants only, the teamsters and horses being charged to the account numbers on which they are working.

On some projects the time and earnings of employees have been posted at the end of the month prior to making up the rolls. If this plan is an aid in any way, it may be done.

Projects requiring badges for the use of their employees can obtain them by making requisition on the Chief Engineer. A uniform badge has been adopted.

On some projects hired teams are classified and paid for according to their earning capacity. This is a good plan, as it not only insures the Government against employing, fattening, and strengthening animals in a poor or almost unserviceable condition—only to have them taken away when of most use—but generally raises the standard of animals used in a particular locality.

PAY ROLLS.

The pay roll clerk should handle all personal records, such as papers relating to appointments, applications for employment, transfers of employees, contracts with employees, etc., and should check up service travel and field expense accounts.

When contracts are made for the hire of many teams or wagons, at the same rate per month, and when the language used in the contracts covering them is practically the same, time may be saved by mimeographing a number of these forms, leaving names, dates, etc., to be filled in later.

On projects where mess houses and mercantile stores are operated, or where deductions are made for badges, board, hospital, rent, etc., the pay roll clerk should keep the employees' ledger card, and from the information shown

thereon make the necessary deductions on the rolls while making them up.

A few days prior to the end of the month, pay roll forms should be sent out to the engineers, foremen, and others. These should be signed (in triplicate) by all employees and mailed at once to the project office, together with time books. Immediately on the receipt of signed pay rolls and time books, the latter should be checked by the pay roll clerk and the rolls made up. Should any errors be found in the calculations made in the time books, such errors, and the recapitulations including them, should be corrected before making up the rolls or delivering the time books to the bookkeeper. A wide carriage typewriting machine can be used in making up the rolls, and with the use of carbon paper all three copies may be made at once, thus saving the time and labor incident to copying them by hand. After the rolls have been made up and checked, charge sheets covering their distribution should be filled in and attached, charge sheet distribution stamped and filled in on their backs, and the pay rolls ruled up to prevent the addition of new names.

All pay rolls, upon their completion, should be checked and approved by the engineers, superintendents, foremen, and others who are responsible for their correctness.

Upon the return of the pay rolls to the office, they should be checked on the ordinary service card, in order to prevent duplications, and then given to the bookkeeper to be entered in the voucher register.

When a project has a large number of employees on its rolls it would be well to make one roll cover them all, consolidating into one voucher as many of the pay rolls as practicable. The fewer vouchers made up the better, for when it is remembered how many employees will handle these accounts before being settled at the Treasury Department, leaving out of consideration the many records which

will be made of them on various books and forms, some idea may be arrived at as to the great amount of time and money that will be saved in reducing the output of vouchers.

It would be well to settle upon some day—say the 10th of a month—for a regular pay day. Such a plan would tend to prevent employees from importuning the office to pay them off before that date, and generally, if it is clearly understood that no employee will be paid between the last of the month and the 10th of the succeeding month, unless discharged, those who do not wish to work during all of these ten days could be placed on a separate roll or sent to the office with a time check to be paid on an open roll.

All three copies of the pay roll should be given to the special fiscal agent for payment.

When practicable, it would be well for the project engineer to instruct the pay roll clerk to personally deliver checks to employees on the works from time to time, and to change the clerks making such delivery occasionally.

On many projects, where the men are leaving the works from time to time, and given Memo. of Time Accounts for payment at the project office, an open roll for the proper handling of such cases should be carried. A slip showing the total of this roll at the end of each day's business should be given by the pay roll clerk to the special fiscal agent, in order that he may balance his accounts every day. As time checks come into the office, they should be pinned to the open roll and filed with it when completed.

FORMS.

The following forms, rubber stamps, etc., are used by the pay roll clerk and others:

Application for employment, registered position (*Form* 7-563)—Instructions on back.

Reference letter (*Form* 7-569)—Self-explanatory.

Contract of employment in registered position (*Form* 7-564)—Self-explanatory.

Memorandum of employment (*Form* 9-568)—Instructions on back.

Transfer of employee (*Form* 9-507)—Self-explanatory.

Memorandum of time account (*Form* 7-529)—Self-explanatory.

Employment or discharge order (*Form* 7-596)—Instructions as follows:

In order that an employee may obtain a limited amount of credit at the project mess house or mercantile store, or that he may be assigned to sleeping quarters, or in cases where the timekeeper is not readily accessible to the engineer, superintendent, or foreman, this order should be made out by one of the officers mentioned, immediately upon the acceptance of service by the employee.

Engineers, superintendents, or foremen should fill in the spaces in the heading of the order for "Project," "Feature," and "Name of Employee" The project chief clerk will later cause to be inserted "Timekeeper No." or name and "Employee's Badge No."

1. Order for Employment Brief.

When the services of an applicant for employment have been accepted, the engineer, superintendent, or foreman will fill in all the spaces under this heading, and after signing his name, give the order to the prospective employee and send him to the project chief clerk, when that officer will take off such information as he may need for his records, sign his name to the order, and issue to the employee a weekly meal ticket, which should be stamped "Not good for more than .... meals unless indorsed by timekeeper." The number of meals—say three or more—can then be filled in. The chief clerk should also issue to the man a badge (should the project use them), assign the man to sleeping quarters, and after filling in the number or name of the timekeeper, send the employee to that officer, in order that his name may be placed on the time book. The timekeeper will place the employee's name on the time book, sign his name to the order, and return it to the office.

2. Change of Rate Brief.
3. Overtime Pay Brief.

Under these headings the same course should be pursued as under 1, Order for Employment Brief, except that the project office will not need to issue a new meal ticket, or badge, or assign the employee to quarters.

4. Discharge slip.

Under this heading the same general instructions should be carried out as outlined in 1, 2, and 3, except that the former employee should go first to the timekeeper with the order, and who will make out the necessary time check, giving same to the man and taking up the order for discharge after affixing his name to the same. The discharged employee should then go to the project office, where he will be paid off on his time check, less any deductions for meals, hospitals, etc. The timekeeper should return the order to the office.

As many of these orders may be made out as may be required by using carbon paper, but it is not believed that more than one copy will be required. The office should file the order for future reference.

Subsistence pay roll voucher (*Form* 9-554)—Self-explanatory.

Subsistence pay roll voucher (*Form* 9-554*A*)—Self-explanatory.

Pay roll subvoucher, A (*Form* 7-538)—Instructions on back.

Pay roll subvoucher, B (*Form* 9-539)—Instructions on back.

Service voucher (*Form* 9-552)—Self-explanatory.

Charge sheet for Washington office (*Form* 7-501)—Instructions on back.

Charge sheet for Washington office (*Form* 9-502)—Instructions on back.

Distribution of charges (*Form* 9-503)—Self-explanatory.

Transfer sheet for Washington office (*Form* 9-504)—Instructions on back.

Debit notice (*Form* 9-505)—Self-explanatory.

Credit notice (*Form* 9-506)—Self-explanatory.

Charge sheet distribution stamp—Instructions as follows:

All project offices should keep duplicates or other complete record of the charge sheets sent to the Chief Engineer's office. This

should be done until the use of the charge sheet is discontinued, which is under advisement.

The voucher register is provided with a column ruled for the entering of the charge sheet distribution, and in order to save space, the letters A to I, inclusive, are used for the secondary charge, while the numbers 1 to 9, inclusive, are set apart for tertiary charges.

After a voucher has been entered in the register, its charge sheet distribution may be shown on the voucher itself by placing the impression of this stamp on the back of the office copy and filling in the amounts with pen or pencil. This obviates the necessity for making out the charge sheet in duplicate and filling up the files with an unnecessarily large number of papers. Later, should occasion require, the information may be readily referred to without necessitating the opening of the voucher to consult the charge sheet."

The use of this stamp is not obligatory, and those who prefer making out the duplicate charge sheet may do so.

Employees' ledger card (*Form* 7-603)—Instructions on back.

Meal card—Self-explanatory.

Service card—Self-explanatory.

Purchase voucher, ruled (*Form* 7-555)—Instructions on back.

Purchase voucher, unruled (*Form* 7-555)—Instructions on back.

Purchase voucher, ruled (*Form* 9-556)—Instructions on back.

Purchase voucher, unruled (*Form* 9-556)—Instructions on back.

Service, per diem, and expense voucher (*Form* 9-550)—Instructions on back.

Travel voucher (*Form* 7-551)—Instructions on back.

Travel voucher, continue sheet (*Form* 9-551*a*)—Self-explanatory.

Subvoucher (*Form* 9-019*r*)—Instructions on back of book.

SHOP ORDERS.

The distribution of shop work on an equitable basis is most important because if the work performed by the shops is not distributed, costs of departments affected by shop work cannot be compared, and there may be serious trouble if estimates have been based on a cost in which such an expense formed a part. When practicable, a clerk should be installed in each shop, if the project operates more than one, but where these are not separated from each other by any great distance, one clerk may attend to the duties of all, provided the work is not too great.

Instructions concerning the use of shop orders (form 7-598) are printed on their backs.

Each shop should keep an inventory account by means of bin cards, and other records described under the heading, "Storehouses," and whenever material is issued from a particular shop, that shop should receive credit for the amount used, the debit being carried to the proper account number. Each shop should make requisition on the storehouse for its material or supplies in precisely the same manner as any other project feature, but when practicable requisition should only be made to meet the demands of each order. Such material would then be charged directly from the storehouse to the correct account number, which the shop clerk supplies. This would tend to eliminate unnecessary accounting and largely avoid the possibility of a duplicate charge. When material is so charged a cross-check should be given, that is, the shop order number should be placed on the requisition, and the requisition number, with the date and description of the material, should be placed on the shop order, thereby enabling the shop clerk to ascertain the exact cost of each piece of work at any time. Should only a small amount of storehouse material be wanted, for instance,

a few feet of steel from a bar of steel of standard length, a requisition should be passed to the storehouse for the entire bar, and a direct charge made to the shop material account. Such material should be taken up as a part of the shop inventory and charged out as used.

Each employee in every shop should be required to keep a daily record of the material used and time worked on each shop order number—Shop Order Card (form 7-614). These cards should be deposited in a box at the end of each day's work, collected by the shop foreman and turned over to the shop clerk, who will insert prices and transfer the information to the several office copies of the shop order and from the shop orders to a special ruled journal, debiting the particular account number to which the order should be charged and crediting each shop with material and labor.

On some small projects, where but little shop order work is done, the use of the shop order card and journal may be dispensed with. When much of this class of work is done it will generally be found that the use of both card and journal is necessary, as to take the monthly distribution from the shop orders to the General Classification Book would be more difficult, especially when there are several hundred orders to be distributed, some of which may be several months old, and there would always be the possibility of errors having been made in dates, total time of shop work and shop material. By using the journal it will be possible at any time to tell the total shop charge of labor and material and at the end of the month it will only be necessary to copy the amounts from the journal to the general classification book under the proper account numbers. Apportionments should then be made for shop supervision, power, wood, shop expense, use of tools, etc., and the monthly shop accounts closed. The total shop labor should check exactly with the time shown by the timekeeper in his time books.

The time of the shop clerk and shop foreman can not readily be distributed on the shop orders, so the proportionate time of each should be noted on the top of the general classification book when distributing shop orders.

The percentage of shop expense to be added to shop orders may be found by adding the cost of labor and material on all shop orders, and dividing it into the total shop expense. Add the percentage on each shop order to the labor and material costs entering into same, and in this manner absorb the shop job order expense not charged direct.

The total expense of each shop should be credited to such shops in the cost ledger, and its component parts debited to the different accounts in the cost ledger.

The shop clerk should have his stock checked up every few months and adjustment made.

DISTRIBUTION OF POWER.

In distributing power charges over the various shop orders and project features, it would be well to consult the engineers of the power plant as to the number of horsepower hours generated each day, the number of horsepower hours furnished to each feature, and the amount of the friction load for the same time. The total of the friction load should then be distributed to the project features, by percentages, showing the total number of horsepower hours used daily, including the friction load. Multiply this sum by the number of days in the month to obtain the total number of horsepower hours used during the month for each feature. The total cost of operating the plant for the month, divided by the total number of horsepower hours generated during the month, should show the cost per horsepower hour, which, multiplied by the number of horsepower hours of each feature, should give the amount chargeable to each feature

for power—the expense for power being absorbed by the features using it.

THE ACCOUNT NUMBER SYSTEM.

This system is known in one form or another to every accountant in the Service, and there is hardly a large corporation, railroad, or manufacturing concern who does not make it a basis for handling its costs and bookkeeping records. It commends itself to the general public on account of the small expense incident to its installation and operation, because of the small number of employees necessary to carry it on, and the facility with which costs can be collected and distributed through a simple process—the use of general classification book.

The system at first did not seem to be applicable to the work of the Reclamation Service, because the work is so diversified, the projects are so very far apart, not only from each other, but from the office of its Chief Engineer, so many different kinds of plants are operated, and such varied business operations are carried.

The Reclamation Service is commencing new works almost every day, and it seemed to be hopeless to attempt to get out certain forms providing for the use of certain account numbers, only to have them thrown aside and reprinted at frequent intervals to meet changing conditions. However, this trouble was overcome by the use of the account number classification book, which simply requires the addition of a few more numbers when new work is commenced, the addition of which will not in any way affect any book or record in use save the account number classification book itself. When new work is about to begin, the chief clerk of an office merely sends to each engineer, superintendent, foreman, or timekeeper for insertion in their notebooks, the list

of account numbers and classification to be used, and adds a copy to the list in the account number classification book kept in the office. This should be done before the work is begun; however, the project engineer should give his cost keeper abundant notice as to the costs he desires kept on that work, leaving blanks for the addition of new numbers, should additional data be required. The system is merely to give to certain accounts entering into the total cost of a feature numbers in addition to names, that they may be readily brought together in one book and distributed at once, so that the project books may be closed within a day or two after the first of the month, rather than that the office force should be working nights until near the middle of the succeeding month before the books can be balanced. The system at first may seem complicated, but after it has been used a few days its simplicity and elasticity will be appreciated. On the four projects of the Service where it has been installed there is no disposition or wish to return to the old order of things. Instead of the large number of awkward and cumbersome sheets required to distribute costs, the entire transaction requires but a few minutes, and the use of a few sheets in a small book.

Another good feature in regard to the system is that busy engineers who have no time or desire to master the theory and practice of bookkeeping can understand this system at once, note comparisons from month to month, and are placed in a position to know each day what the several operations over which they have supervision are costing the Service and be at all times masters of the situation.

The first step in installing this scheme is co-operation; after that the balance is easy.

Go over all live feature and other accounts and assign numbers to each one. Begin with number one always, and end the classification with a number ending in nine, so that

later accounts may be readily found in the general classification book. Leave plenty of numbers for the addition of new accounts, for after the engineer commences to obtain reliable cost figures he is sure to want his costs in greater detail, which will require the filling in of blank spaces left in the account number classification book. The engineer may say that he will be satisfied if he can obtain certain data, but be on the safe side and *leave the numbers.* One or more of them will surely be needed.

Do not make the mistake of beginning with large numbers. They are cumbersome.

Do not use alphabetical prefixes if it can possibly be avoided. They are sure to lead to much confusion in distributing costs later.

Do not subdivide costs to the extent that it will take many timekeepers to collect the data wanted. If this is done the data will prove worthless when accumulated.

When a new account is started, begin it with the number immediately following the last number used on the last account in the account number classification book and in the cost ledger.

Open the cost ledger and arrange accounts as per the account number classification book.

At the end of the month post to the cost ledger from the general classification book.

Close your accounts in your old books and bring the balances forward to the cost and general ledgers.

If the distribution of all costs or numbers registered on a voucher register is not complete, it should be made so *at once,* even if an extra force of men is required to accomplish the work. The system may be installed while this work is being done, and the balances brought forward when the work has been completed.

Do not start the system in the middle of the month. Be

sure it is well understood first, and send out explicit instructions to all concerned that there may be no misunderstanding of orders.

Explain to storehouse clerks, timekeepers, and others that there is no necessity for their knowing all the account numbers in the account number classification book—that they are concerned only in those that they are to use on their particular features.

In making up the local account number classification book, do not have it printed—a mimeographed copy is sufficient. It will have to be changed too often to admit of being printed.

Do not be discouraged if there is trouble in getting the system installed during the first few days until the men get used to it. Some friction is naturally expected at first.

If there is lack of co-operation the project engineer should support his subordinates in asking for necessary information to insure a complete record of all transactions and the results obtained. In this way only can the accounting system be made a success.

Send copies of the account number classification book to all who may be obliged to consult it.

Send three copies of the book to the office of the Chief Engineer—one for his information and two for the committee on uniform accounting.

There is no objection to inserting explanatory notes or instructions in the account number classification book. On the contrary, it is a good plan.

Number the pages in the account number classification book and index the book.

One of the chief features of the account number system is that it not only furnishes correct costs inexpensively, but enables these costs to be collected quickly. To accomplish the latter, there should be turned in promptly at the end of

each day or month all receipts for material and supplies delivered on the project during a given month, reports of all materials and supplies produced, from which deliveries have been made for use on the project, reports of shop work, and all other reports of departments whose work has entered into the monthly costs, and which are taken up on the books and accounted for. This being the case, do not hesitate to use the telephone, and insist that timekeepers, storehouse clerks, foremen, and all others concerned send in their statements and reports immediately.

This system contemplates that cost figures and bookkeeping records (which are one and the same thing) be taken at one and the same time in order to save both time and money, and at the same time that a close check be kept on all accounts. The objection has been made that men who have no knowledge of accounting methods are depended on to aid in collecting the data for the books. This is true, but there are only a few instances where the records have been impaired on this account, and if a mistake be made in the number placed on a requisition, it is soon detected in the office or by the foreman or other person against whom the erroneous charge is made.

A few of the accounts shown in the exhibit of the account number classification book used on the Salt River, Yuma, and Carlsbad projects are discussed below.

General expense.—This general expense should include expenditures of a general nature that cannot be charged directly to any other account, but have been made for the benefit of the entire project. If any item appearing in this subdivision can be applied directly to any other subdivision or account, it should be done.

The item of general expense is used at the office, where the office pay rolls are distributed. Timekeepers may carry on their rolls some items chargeable to general expense

classification, but before making such distribution they should receive instruction from the office. The general expense classification should be used by all branch offices.

Plant accounts or producing departments.—These accounts should represent the cost of producing a given product or article only, and would include every item of necessary expense, including labor, material, repairs, depreciation on machinery, etc. All expenditures for additions to a plant, however, would not be included in such a subdivision and would be added to the cost account covering the original plant building expense. These producing plants would probably be treated as auxiliaries to the storehouse, and requisitions showing deliveries made to various project features would ultimately find their way to the project office. They should also send in a report promptly at the end of each month's business, using form 7-601, Statement of Issues from Inventory Account. The deliveries should be credited to an inventory account for the particular product being manufactured.

Storehouse account.—Such an account should represent the cost of handling supplies in the storehouse, including the pay of clerks and other help, office expenses, repairs to building, etc. It should be closed at the end of the month into such an account as Storehouse Freight and Handling Account, kept in the general ledger. The manner of handling storehouse issues and receipts have been discussed under other captions. The storehouse inventory account should be charged with the invoice price paid. The issues from the storehouse are made at the invoice price charged, plus any freight and handling which can be made at the time. As some projects may not be able to distribute freight charges when issues are made from the storehouse, and as the various cost accounts should carry the cost of freight and handling, and of storehouse issues, an account for freight

and handling would be necessary to take up and absorb on as equitable a basis as possible, by distribution, this cost. Instructions might therefore be issued that a certain percentage be added to the storehouse issues at the end of the month, to cover the cost of freight and handling, and this amount credited to the storehouse freight and handling account in the general ledger. As this account is charged with the freight paid from time to time, together with the monthly cost of operating the storehouse, the percentage might be increased or decreased each month, so as to completely absorb this expense.

Subsistence and corrals.—These accounts should be kept with each mess house or corral, the basis of each account being with an inventory account. At the end of a month an inventory should be taken and the inventory account credited, the increase or decrease being taken up on the profit and loss account in the general ledger. These accounts should be closed out each month by distributing the charges over the features, according to the number of men fed during the month.

Gaging station.—These accounts are closed monthly, according to the report of work done during a month.

Cableways.—These accounts show the cost of operating cableways, and are closed against the particular construction account on which the cableway is used.

Waterworks.—These accounts show the cost of maintaining the waterworks of a project, and the charges should be distributed monthly over the departments using water.

Fire protection.—These accounts should show the cost of fire protection, and should be closed out monthly by distribution over the various departments on about the same percentage basis as general expense.

Surveys.—A report of surveys should be rendered each

month, and the cost should be distributed according to this report. The entire account should be closed monthly.

Sanitation of camps.—These accounts are closed monthly, according to the various features affected.

Inventory accounts.—The object of inventory accounts has been explained in part in the discussion of other accounts, from which inventory accounts necessarily originate. These accounts are increased or decreased as desired. Certain material accounts that are used in the manufacture of articles produced, or partly consumed from month to month, can be carried under one caption—say storehouse for instance—but this should not generally be done, because the more individual inventory accounts carried on the books the more convenient it will be to check each particular inventory, the status of such accounts being much more readily brought to the attention of the project engineer than if included in one account. If it is desired to carry but one account, a separate report of the condition of these inventory accounts should be rendered monthly for inspection and verification. These accounts should be charged with the cost of production, or with the actual cost of purchases, including the invoice price and cost of transportation laid down at a particular spot from which deliveries to the various parts of the project are made. The cost of delivering from an inventory location to the project feature using the material must be borne by that particular feature, and the labor of transportation should be carefully watched and distributed by the timekeepers. The cost being shown in the ledger of production or purchases, the amount used takes the value basis on the average unit price, as shown by the debit side of the account, and the balance representing the inventory on hand is brought down at this average price. To the balance on hand on the first of any particular month should be added, as explained above, the cost of production or purchase. These purchases should

appear on Form 7-601, Statement, issues from inventory account, as rendered by the producing departments, or those in charge of the inventory accounts.

The inventory account should, of course, be checked frequently with the actual material on hand. When the material has been finally disposed of and a balance is found to remain in the inventory account, adjustment on the books should be promptly made to close it out.

Timekeeping.—The work of timekeepers will not be affected in handling inventory accounts, but there may be times when material, considered as being included in an inventory account, is delivered to a certain point which carries with it a particular cost up to that point, and in order to have this material reach the consuming department there must be an expense for hauling, etc. Take, for example, wood used at a power plant. The cost of the wood in the inventory account would cover the wood as it is delivered and piled in the yard. The cost of getting it to the power plant would be chargeable to supplies—fuel at the power plant, because the wood is delivered in the yard at a fixed price; but if there is any expense for labor in having it delivered at the yard it would be chargeable to inventory account.

On material bought and delivered at a certain place there should be added the additional expense of moving it to the point of consumption. All such costs are chargeable to inventory accounts.

As soon as requisitions from the storehouse are received by the office they should be entered in the general classification book, and when all have been turned in for the month the total of each account number is arrived at and listed on this form. The amounts are posted in the cost and general ledgers, except that the total is credited to storehouse inventory account.

CONTROLLING ACCOUNTS.

Controlling accounts are accounts carried in the general ledger, that represent the summation of the detailed accounts, the aggregate of which must agree with the amounts represented in the balances of such controlling accounts.

It would be impossible for any one to state definitely just what controlling accounts should be opened on each project, that being left largely to the local accountants, but in the main they should be vouchers paid, direct charges, labor, miscellaneous freight, inventories of various kinds, profit and loss—board, profit and loss—mercantile stores, profit and loss—hospital, profit and loss—rent, cost ledger, unpaid accounts, and equipment. (*See* Balance sheets of Salt River and Carlsbad projects.)

The principal reason for carrying but one controlling cost ledger account in the general ledger is because of its elasticity, and the convenience and promptness with which the balance of the cost ledger may be found.

An inventory-equipment account should also be opened. This account should be charged with all equipment as it comes to the project. As equipment is issued to each feature of the project, the account should be credited and the feature debited. When the feature is complete, an appraisement of the valuation of the equipment, as turned over to other features, or returned to the storehouse, should be made by responsible persons, the differences between first cost and appraised valuation being debited to the particular feature on which the equipment has deteriorated or depreciated, and the appraised price going back to the debit of the equipment account. This account would aid greatly in solving the trouble of depreciation, and do away with almost all arbitrary depreciation charges.

In order to obtain correct costs on projects on which

Government teams and wagons are used, care should be taken that a fixed price—such a price as would usually be paid for the hire of teams and wagons in the vicinity—be charged to this feature for the rent or hire of such equipment. Should the price for feeding and shoeing Government animals, and repairs to wagons, be the only charge to the feature, the cost as compared to the feature operating with hired animals and wagons would be thrown out of all proportion. The equipment account could take care of such charges.

The subject of depreciation is a difficult matter to handle, especially so far as the Reclamation Service is concerned. The Service is not manufacturing commodities for sale; but it is necessary, so far as it is practicable, to obtain a fair figure as to what the charge for depreciation of the machinery manufacturing such commodities might be. The conditions are peculiar, inasmuch as machinery is bought for the purpose of producing certain articles, power, or product, necessary to the construction of a certain project, and to have bought either one of these in the open market might, and probably would, have meant the expenditure of a much larger sum than the entire cost of the plant, plus running expenses, maintenance, etc. For this reason, it is difficult to determine just what depreciation charges should be. A manufacturer who makes the same article for sale day after day, and who uses the same class of machinery year after year, may, and must, arrive at some conclusion as to what his plant is losing in earning power daily, for if he does not, he will eventually—because of keen competition, or for other reason—be forced out of business; but, where a plant is run for a year or so, to aid in the completion of a certain project, and where that same plant, by reason of certain physical or other conditions, may not be worth the money to move it to some other point for sale (conditions

having changed in the meantime) the subject of depreciation is a most difficult one for the Reclamation Service to handle. For the reasons set forth above, the equipment account may be most helpful, but it is urged that the accountants endeavor to obtain some report from those handling machinery and other mechanical devices, whereby some equitable and uniform basis for figuring depreciation may ultimately be arrived at.

Whenever any piece of equipment is used continuously and solely on one feature of the project the cost of such equipment may be charged direct to that feature, a subsequent credit to be made for the remaining value of the article of equipment when it is transferred to other work. In such cases repairs should also be charged directly to the feature on which the equipment is employed. Examples: An excavator used on a canal; drills used in tunnel heading; concrete mixer used solely on one structure.

On the other hand whenever equipment is used irregularly on one and another feature, and occasionally on operations incidentally but not directly contributing to the building of any project feature, it is impracticable to make direct charges for equipment and the repairs thereon. For such operations there must be an operating account which should be charged with the entire expense for a given period, including all expense for labor, supplies, and a proper proportion of depreciation, and which should be credited with its output at a price sufficient to absorb the entire expense.

The form given below is offered to all accountants of the Reclamation Service as a basis for collecting data that will benefit the Service, and a report to the office of the Chief Engineer as to the results obtained from it will be appreciated.

Operating Statement.

DEPARTMENT OF THE INTERIOR
UNITED STATES RECLAMATION SERVICE
——— PROJECT.

Statement of Operations of ——— Feature for the month of ———, 190 .

Value of inventory of materials, supplies, and of completely and partly manufactured stock on hand at end of last month.....	$.....
Charges this month on requisitions.....	.....
Charges this month per time books, etc.....	.....
Estimated depreciation this month*.....	.....
Issues this month on requisitions.....	$.....
Value of inventory of materials, supplies, and of completely and partly manufactured stock at end of this month.....	
Totals	$.....

*Depreciation estimated as follows:

Original cost, including installation.....	$.....
Estimated cost of repairs during period of service	.....
Total cost.....	$.....
Estimated salvage value at end of service.....	$.....
Estimated depreciation.....	.....
Estimated period of operation (months).....	.....
Estimated monthly depreciation.....	.....

BOOKS AND FORMS USED IN BOOKKEEPING.

Voucher register (*Form* 7-607)—The instructions issued concerning the use of the voucher register are as follows:

The voucher register should be used for recording all vouchers paid, or forwarded for payment. It is intended that the voucher register, cost ledger, summary of cost ledger accounts, and general ledger (all loose-leaf forms) will be kept in the same binder. On some large projects this may prove to be impracticable, in which case the voucher register may be kept in a separate binder.

Vouchers should be taken in triplicate on every project, two copies being for the special fiscal agent, one copy remaining in the

project office files. Vouchers should be certified by the local approving officers (after attaching charge sheet) when the office copy should be given a number, charge sheet distribution stamped and filled in on its back, and registered in the voucher register. The numbers of vouchers should run consecutively. All three copies of the vouchers should then be given to the special fiscal agent, who after paying the account, should return the office copy, placing in spaces provided for that purpose, date of payment, amount or amounts paid, depository, and under the office voucher number his own number.

The space for "Project," "Folio No.," and "Month" should be filled in.

The date refers to the date of presentation to the special fiscal agent, and should be inserted in order to protect the chief clerk, should complaint be made regarding tardiness in making payments.

Fill in space for "Office Voucher No.," "Fiscal Agent's No.," "Favor of," and "Amount."

The column "Explanation" is for stating the character of the voucher paid, as field expenses, team hire, pay roll, etc.

"Direct charges" are for the entry of such vouchers as can be charged direct to a particular feature, and in such cases both the account number and amount should be filled in. The column, "Labor" is for the entry of amounts of pay rolls, service vouchers, etc., with month of incurring liability and amount.

In the column "Miscellaneous Freight" place all freight transportation accounts—railroad, express, wagon, etc., where such expense is not included in the inventory accounts for the articles on which incurred.

The column captioned "Inventories" has reference to any or all inventory accounts and the five unheaded columns are for individual inventory accounts, such as storehouse, mercantile stores, etc.

Under the heading "Charge Sheet" fill in the account number and amount, using letters for secondary charges, and numbers for tertiary charges.

The Debit Notice, Form 9-505; Credit Notice, Form 9-506; Contract Claim, Form 7-545, and Miscellaneous Claim, Form 9-546, are to be numbered and entered in the voucher register, as any other voucher would be.

The voucher register should be closed promptly at the end of the month, and the total of its various items carried to the statement of vouchers paid, Form 7-594, which is to be given to the book-

keeper for transfer to the cost and general ledgers, as the figures shown thereon will be needed by him to verify the results of the month's operations.

The totals for each page should be entered, one being page total, and the other the total disbursements to date.

Cost ledger (*Form* 7-608); *summary of cost ledger accounts* (*Form* 7-609); *general ledger* (*Form* 7-610)—Instructions concerning the use of these books are as follows:

Cost ledger.—In the cost ledger the various accounts should be arranged in the same numerical order as shown in the local account number classification book.

Each sheet shows twelve money columns and the same number of "Unit Cost" columns. These are for the purpose of showing a monthly comparison of cost figures for a year. The "Unit Cost" columns can not be filled in, however, without reference to the cost keeper, who should provide the figures to complete the statement each month.

After filling in the spaces for "Project," "Folio No.," and "Feature," the bookkeeper should open the ledger with an account with each feature from which balances have been brought down, according to this classification, and insert the account numbers under each subdivision, and the name of the account the number represents, in the same order as shown by the local account number classification book.

When new numbers are added or new subdivisions created, the bookkeeper, and others interested in compiling the figures used in making up the various cost accounts should be notified.

The main channels for entry to the cost ledger are:

(a) Inventory accounts and other direct charges from the voucher register.

(b) Statement of vouchers paid, Form 7-594.

(c) General classification book, Form 7-580.

(d) Statement distribution of storehouse issues, Form 7-600.

(e) Statement issues from inventory account, Form 7-601.

(f) Journal vouchers, Form 7-593.

Care should be taken to see that every item of expense is posted to the cost ledger, when a trial balance should be taken, and the figures verified, the balance agreeing with the cost ledger account in the general ledger. If this is found to be true, close the accounts

in the cost ledger and complete the building and incidental operation expense statement, form 7-599.

The space provided for "Summary," "Month," and "Amounts" should be filled in when every feature account in the ledger is closed.

Make out the several project monthly cost reports, form 7-602, which are to be forwarded to the office of the Chief Engineer, where they will be transferred to a cost ledger, and summary of cost ledger accounts kept for each project.

Summary of cost ledger accounts.—These sheets are intended to show all feature accounts and a comparison of their total cost and unit costs, month by month, as the work progresses. The first and last columns, "Balance 1st of," are for bringing forward the total cost for each feature from the summary column in the cost ledger.

Spaces provided for "Project" and "Folio No." should be filled in, and the column marked "Accounts." Fill in the name of the feature. The total of the accounts shown in the summary should balance with the total of the cost ledger or the cost ledger account in the general ledger.

General Ledger.— Pages for the general ledger should be placed in binder, immediately after summary of cost ledger accounts.

Fill in spaces provided for "Project," "Folio No.," "Name," etc.

The initials J. V., V. R., and C. L. in the three columns represent journal voucher, voucher register, and cost ledger, and are for the insertion of numbers.

The general use to which the form is to be put needs no further explanation.

Enter in the book all controlling accounts and all other accounts not carried in the cost ledger. In this book should appear inventory accounts of one kind or another, the details of which may be carried in another part of the general ledger. An account should also be kept with labor, pay rolls, or unpaid labor, the details of which should be shown on distribution of labor statement, form 7-597, and statement of unpaid labor, form 7-591. The balance should agree with the general ledger account of the same name.

After these accounts are closed at the end of the month, a comparative balance sheet should be drawn off, showing the balance of each account in the general ledger.

Journal voucher (*Form* 7-593)—Instructions on back.

Statement of vouchers paid (*Form* 7-594)—Instructions on back.

Statement of unpaid labor account (*Form* 7-591)—Instructions on back.

Distribution of labor statement (*Form* 7-597)—Instructions on back.

Statement, issues from inventory account (*Form* 7-601)—Instructions on back.

Statement, distribution of storehouse issues (*Form* 7-600)—Instructions on back.

Building and incidental operation expense statement (*Form* 7-599)—Instructions on back.

General classification book (*Form* 7-580)—The instructions for the use of the general classification book are as follows:

Insert a sufficient number of pages in the binder to cover the account numbers shown in the account number book. Number the pages serially, except the first two, which are to allow for the classification of account numbers 1 to 9, inclusive. After the pages have been numbered, page 1 will show the distribution of accounts Nos. 10 to 19, inclusive; page 45, of accounts Nos. 450 to 459, inclusive, etc. In this way each account may be readily found. In cases where certain accounts are no longer active by reason of the completion of the work which they represent, pages for them may be omitted.

A rubber stamp may be used to insert name of project and of feature account.

At the end of the month all items forming integral parts of cost data will be distributed in this book. The charge for labor will be taken from the recapitulation of the time books. The charge for articles or materials furnished by storehouses or the mercantile stores will be taken by totals from the books set apart for the distribution of such charges during the month, and a percentage for freight charges should be added, unless the expense for freight is directly included in costs of articles as shown on the requisition. Other charges, such as direct charges from the voucher register, power, corrals, lumber, cement, shop orders, etc., will also be added,

so that the total of the distribution for the month will be the total of the cost ledger account in the general ledger less credits to boarding-house, or mess, accounts, and accounts of a similar nature.

In order to avoid journalizing, credits may be taken up on this book and carried to the proper accounts later.

The suggestion is made that pencils or inks of various colors be used to enter certain classes of cost data. For instance, black ink or pencil for issues of various kinds; red ink or pencil for services; purple ink or pencil for corrals, etc. This plan may frequently save much time in tracing charges.

An account should be kept in the classification book each month with each of such issuing departments as storehouses and mercantile stores, in order that the project offices may be fully informed as to existing conditions. Enter every day, opposite the proper date, from the office copies of the requisition blanks, according to account numbers, the money value of the issue of such departments. A recapitulation of these daily issues or sales may be kept on a blank page of the book, so that on each day the office may know the total money value of the stock on hand, and be able to check up the clerks in charge without waiting until the end of the month. By the end of the month the storehouse and mercantile stores distribution will have been completed, and all that will be necessary to verify the figures will be to see that the totals of the pages in the classification book equal the total of the recapitulation. In entering the amounts by account numbers from the requisition blanks care should be taken to see that the total of the amounts entered equals the total of all the requisition slips for a particular day's business.

The totals of the monthly debits or credits to each account when segregated in this book by account numbers should be carried to the cost ledger in one amount, under date of the last day of the month.

After all costs have been carried to the cost ledger, take the leaves out of the book, bind them together, and file with former parts in serial order for future reference.

In entering each day's issues in the general classification book from the requisitions, care should be taken that the amounts have been correctly entered. It would be well to use the adding machine to ascertain first the total amount

of the requisitions, and later ascertain the total amount distributed by account numbers in the book. File requisitions for each day's business together where they can be referred to readily.

If the project has more than one storehouse, the requisitions for each storehouse should be filed separately. In case a storehouse makes no issue on a particular day, file a dummy to represent that day's business, marking thereon "no issue." This may later aid a clerk's memory, provided he is at a loss to know why that day's issues are not in the files.

Summary.—In addition to the forms listed above, every project office should open a personal ledger—any loose-leaf ledger form would fulfill the requirements. In such a book should be listed the invoices of all firms submitting invoices, crediting them with the accounts as rendered—giving date of invoice and amount, purchase order number, request for purchase order number, and all necessary information; and when the account is finally paid, give date of payment, number of voucher (office copy), check number, depository and amount, etc., etc. This book makes the office force anxious to pay bills promptly and aid in obtaining better prices. It will also aid greatly in checking back an account with a merchant who disputes the accuracy of the amount of his check, and save an endless amount of time in looking over old vouchers. Under no circumstances should an account remain unpaid in a project office for a period of over thirty days, unless the same is held up for some good reason. This ledger should be balanced as soon as an account is disposed of, and its credit total carried to the unpaid bills account in the general ledger.

ENGINEERING CONSTRUCTION COSTS.

There is no subject in which there has been such constant and growing interest within the last decade as in engineering construction costs. The importance of systematic records of cost of work is fast becoming fully realized. The Reclamation Service, as well as modern manufacturers, contractors, and engineers in general, are initiating methods of obtaining this kind of information and are attempting to put it to practical use.

The purpose of keeping such costs is two-fold; first, it enables the engineer to adopt the most economical methods and to select, arrange, and operate his machinery and men in the most economical manner; and, second, it enables him to estimate and analyze the cost of proposed work with intelligence and precision. Engineering construction costs are, therefore, the fundamental data of estimates and execution of engineering work; and the engineer who tries to get along without them draws conclusions without known premises. The almost inevitable results of such conclusions are extravagance and loss.

For the first purpose, a sufficiently minute classification is requisite to give the engineer a clear conception of the results which are being accomplished, thereby enabling a comparison of cost of work in one locality, or cost of any particular feature of the project with the cost of similar work, or of a similar feature elsewhere located. To fully meet this requirement, careful, but not too minute classification is requisite.

For the second purpose, information in detail carefully classified is required, but indefinite duplication of results is of continually decreasing value.

To secure uniformity in the keeping of cost accounts, and to insure that cost keeping is carried sufficiently far to

be advantageous, and, on the other hand, to insure that it is not carried too far to be practical, the following rules should be observed:

1. Separate accounts should be kept for each project feature that is estimated to cost more than $1,000.00.

2. Features ranging in cost from $300.00 to $1,000.00 may or may not be treated separately, at the option of the supervising engineer, according to local conditions; and

3. Small similar features, each estimated at less than $300.00, shall be grouped, unless special reason exists for treating one or more thereof separately.

PROJECT, DAILY AND MONTHLY FEATURE REPORTS AND PROJECT ENGINEERS COST DATA CARDS.

Engineers, superintendents, foremen, and others having charge of structural or building work of any description should send in to the project office a daily report showing the number and classification of men and animals employed on certain features of that work, the rate of pay, unit of cost, etc. This report should also include the cost of such items as sacks of cement, lumber, structural iron, and other material or supplies used or entering into the work. These figures can be obtained from the copies of the requisition blanks returned. The final results should then be shown—such as number of feet of pipe made, cubic yards of concrete placed, cubic yards of rip-rapping laid, or cubic feet of tunnel driven, and the unit cost. These statements should then be followed up with remarks as to distance from the nearest railroad point of shipment; weather conditions (extremes of temperature); labor conditions (difficulty of obtaining men, high or low price paid); road conditions (whether they are in good or poor shape for traveling, and likely to affect the costs of

hauling of material or supplies), and market conditions (inability to obtain materials or supplies on account of shortage, etc., etc.). In short, the remarks should be made so comprehensive as to take into consideration any condition, usual or unusual, which might contribute in any way to affect the unit cost—such as floods, fires, etc.; for as this information will go later into the project monthly cost report, form 7-602 (instructions on back), which is sent to the office of the Chief Engineer, it can not be too complete, for that office will send out cost data in comparative form to all projects, and unless these conditions are fully set forth the data would be of very little practical value.

It has been found to be impracticable to furnish uniform blanks for these feature reports. The work on all the projects is so diversified and the operations which are being carried on vary in so many different ways, the desires of individual engineers as to what should be the analysis of certain costs are so varied that it would appear best to have these forms mimeographed at the project offices and sent out to those who are to use them. In some cases, when the same class of work will be done daily for a long time, purchase orders for the printing of such blanks may be sent to the office of the Chief Engineer. These forms, if mimeographed locally, can be revised from time to time, at the instance of the project engineer and his cost clerk, after consultation with those who are to use them. These daily reports should show not only the amount of work done each day on a particular project feature and give the cost of the same, but act as a check on the timekeeper and show the project office whether the various engineers, superintendents, foremen, and others are exercising good judgment in making requisitions on the storehouses, etc. These daily reports should, as far as practicable, be checked against the time books at the end of the month. They also enable the project

engineer to watch carefully every item of cost entering into a particular piece of work and make it possible for him to stop excessive charges at any date without waiting until the end of the month. Daily feature reports from several projects have been printed as samples.

These daily feature reports should at the end of the month be supplemented by a monthly feature report, which can be made up in the office. These reports would embody practically all the information contained in the daily reports and should be sent out to all engineers, superintendents, foremen, and others who are doing the same class of work. Such a plan has been found to engender a friendly spirit of rivalry among those concerned which generally results in smaller cost and better work.

Under the heading of monthly feature reports would also be classed such comparative reports as subsistence and forage. Such reports should be based on an inventory which all camps or corrals would be required to turn in promptly at the end of each month. When these comparative reports have been made out, copies should be sent to each steward, cook, corral foreman, or others interested, generally with the result that costs are kept down. These reports are also necessary in order that the project may not be subsisting its employees at a loss of money. In cases where the cost of feeding either an employee or an animal is found to be excessively high, the attention of those responsible for the conduct of the particular camp should be called to the matter in order that abuses may be corrected. A few samples of monthly feature reports have been printed.

Each project engineer should have on his desk a card cabinet showing such costs as subsisting various camps, feeding animals, concreting, excavating, and the many subdivisions of his project work. These cards may be arranged to show comparison by months of features finished

or incomplete, etc., so that the project engineer may always be in a position to know at any time not only what a finished structure has cost the project, but what one is costing from day to day. The cost clerk should see that the project engineer is relieved of any detail work in obtaining these cost figures, and that the engineer's wishes are anticipated in procuring cost information. These cards should be accompanied by sketches and such notes as will explain readily any apparently excessive prices. Such a card system enables the engineer to issue frequent instructions to his subordinates in regard to the cost or amount of their work, and also aids him in making special reports on certain project features to the Chief Engineer. These cost data are valuable not only to the local or project engineer, but also to the Chief Engineer, who is, on account of such data, better able to figure on work of a similar nature.

The value of the cost data kept by the project engineer will depend largely upon the daily and monthly feature reports, and reference will have to be made to them in order to make out the monthly project cost report for the Chief Engineer.

As in the case of daily and monthly reports, it has been found impossible to devise a form or size of card acceptable to all projects and therefore these details are left to the project engineer and his cost clerk. Samples of cards used on certain projects have been printed.

CONTRACTOR'S COSTS.

The reasons for the determination of contractor's costs are to furnish information in regard to (A) the profits or losses of the contractor; (B) the probable ability of the contractor to complete his contract; and (C) unit costs which are of value in determining estimates of cost and reasonableness of bids for future similar work.

The plans outlined in the foregoing pages contemplate the handling of such cost accounts as the project engineer may desire to be kept, and where he has control of the organization this may be readily accomplished, but in obtaining costs of contractor's work, individual preference and ingenuity must largely govern the method of procedure. As a general rule it would be well to induce the contractor to use the forms prepared for the use of members of the Reclamation Service, to furnish him the forms without cost, and even to engage the services of his timekeepers in this work. Most contractors engaged in construction work for the Reclamation Service have no particular system of accounting, this being particularly true of such contractors as sublet their work, who are interested only in obtaining their particular profit. It will be difficult to get such a contractor to adopt an up-to-date accounting scheme; but where a contractor is not subletting his work, he may be only too glad to use the Service forms, particularly if it were made an object to him. Such a plan would work to the advantage of the contractor as well as to the Reclamation Service, as it would mean a direct check on his expenditures, and serve to save the contractor money. With the contractor who has his own system of accounting, however, it would be difficult to make any such arrangement, in which case the duties of timekeepers, inspectors and others on this class of work, will be made much more arduous. A number of plans for obtaining this class of information have been formulated by members of the Reclamation Service, each one showing considerable thought and study, but differing in all essential features. Probably every engineer in the Service has some plan for collecting contractor's costs, and the following, based largely upon all of these plans, is offered for consideration:

A comprehensive method of cost keeping must be based

on a logical analysis of the elements of cost pertaining to the work under consideration. The degree to which the analysis should be carried depends on the magnitude of the work. On small jobs a close analysis is both practical and desirable, but on large works of varied character, such as those being constructed by contractors for the United States Reclamation Service, in which the necessity for a method adapted to all items of classification of work exists, it is not advisable to enter into laborious refinement. For such engineering work the methods adopted by the Reclamation Service require the distribution of costs under the following heads: interest investment; preparatory expenses; plant depreciation; materials; supplies; executive; labor and engineering. These heads are defined to cover expenses as outlined below: (1) Investment interest. All charges for insurance, bond premium, and interest on cash and borrowed capital. (2) Preparatory expenses. All charges for the construction of roads, erection and drainage of camps, delivery and installation of plant and other expenses involved before the actual construction begins. (3) Plant. All charges for repairs, and the depreciation of all property employed in the operations by which the finished product is made, but which does not enter that product and is not consumed in such operations, excepting as to wear and tear. Plant includes real estate and improvements thereon, machinery (both fixed and movable), tools, instruments, vehicles, animals owned, etc. (4) Materials. All charges, including freight, for property that enters into and remains a part of the finished product. Materials often refers to raw material, but it should be noted that the finished product of one operation, sometimes called stock, often becomes the raw material of a subsequent operation, and is then designated in the latter organization as stores. (5) Supplies. All charges, including freight, for property that

is used upon and wholly consumed in the operations by which the finished product is made. (6) Executive. All charges for salaries of superintendents, foremen, time keepers, clerks, watchmen, and for other general administrative expenses. (7) Labor. All charges for hire of teams and of skilled and common labor not classified in executive. (8) Engineering. All charges for salaries of engineers and inspectors.

The distinction between materials, supplies, and plant is not always an easy one to make in advance of their use, though when the articles are actually employed in productive operations there should be no difficulty in deciding into which class any article should go. In some instances the same substance is differently classified, according to the disposition that will be made of it. Timber may be sawed into lumber and become material for the manufacture of furniture, or it may be transformed into plant by the enlargement of the factory or it may be cut into cord wood and become supplies for use as fuel.

But whether it is easy or difficult in any case to draw the distinction between the three classes of stores, the reason for such distinction is sound. It is possible to measure the quantity of materials used in each article of the project, and there need be no estimate whatever. It is possible to measure the quantity of supplies used upon the product for a certain period, but an estimate is necessary in distributing such expense. It is impossible to measure accurately depreciation or wear and tear of plant, and both the amount of such expense and its distribution must rest on estimates. It is plain that the most accurate results are obtained by so classifying expenses as to group those in which the elements of uncertainty and estimate are absent or at the minimum or at the maximum.

In order to distribute the costs properly in this system,

they should be charged directly to the items of the contract to which they apply, where possible, and should be otherwise prorated during the continuance, or at the completion of the contract. For the purpose of facilitating the keeping of costs and of giving full value to the results, the contract items should be carefully classified in specification schedules, so as to require bids on each distinctive class of work having a common cost.

The collection of data for this method of cost keeping should be made by means of the time and material distribution system. In the time book several pages should be devoted to the records of a single contract item, the entries being made under the heads of Engineering, Executive, and Labor. The time book may also be used as a material book, in which charges against each contract item should be similarly made under the heads of Plant, Material, and Supplies, etc.

The information contained in the time and material books should then be carried forward at the end of each day to the general classification book, and at the end of the month, the totals shown in this book should be carried to separate leaves in the same book, after entries have been made for the monthly estimates, and unit costs have been distributed under the various headings. It may frequently happen that the cost keeper on contractors' cost may be able to apply the principles of the account number system in distributing his costs in the general classification book; and when this is feasible, it should be done. If it is not feasible, however, he should insert the names instead of the number, but this is left to his own discretion.

In this general classification book accounts should be carried with each item of the contract, secondary charges being made under the proper heads hereinbefore mentioned. Certain charges, such as those against investment interest,

preparatory expense, and portions of others, are necessarily carried forward en masse until the completion of the contract, at which time distribution is made among the items of the contract. The methods employed in collecting contractors' costs are those which pertain to ordinary construction work with such variations as may be necessary in each case. Statistics of productive labor, materials, and supplies are collected by inspectors. Unit prices of labor, materials, and supplies may be assumed at market rates, or, if the contract requires it, as is frequently the case, the contractor may be requested to furnish these and other data which cannot be readily collected by inspectors. It may be necessary and desirable to estimate many of the details of such costs. For example, in the case of horses owned by the contractor, it is frequently more satisfactory to reckon the cost of their work on the basis of current rates for hiring animals rather than to determine the cost of maintaining them and to estimate depreciation, etc.

While figures are always essential to the usefulness of cost data, it is recognized that a complete knowledge of the conditions affecting component prices is equally imperative. The character of machinery, the conditions of labor, the geography of the work, the topography of the site of the work, the proximity of constructing material, the condition of the weather, and other similar circumstances are all important matters for record. Entries in the time books of these elements of cost should, therefore, be made by the timekeepers. The costs as reported should be divided into two parts, (A) those which are determined accurately, and (B) those which are estimated. The accompanying explanations should be so complete that other persons using the data may be able to judge their value and the limits of their accuracy.

In addition to keeping the field records, as outlined

above, it is essential to keep the office of the Chief Engineer informed of the monthly progress and cost of the work being done in the field. For this purpose blank forms have been devised—Forms 7-530 and 7-537 (See instructions on back of each). These cost sheets have been so designed as to make it possible to copy the information required by them directly from the engineering costs, as shown in the general classification book. In the use of these forms it is imperative that each engineer be painstaking in filling out all of the details of each sheet, and in transmitting them as promptly as possible after the end of each month.

At the completion of each contract the accounts of the items thereof should be closed after making the proper distributions of the various expenses on all of the items. The office of the Chief Engineer should then be immediately supplied with the resulting data. For the transmission of this information blank form 9-548 has been prepared. (See instructions on back). This form is intended to incorporate a report on and an analysis of the cost of one item of a contract, both the contractor's cost, and the actual construction cost, a separate sheet, therefore, being used for each item of the contract schedules.

After the completion of the various classifications for each month's business, the sheets can be taken out of the general classification book and filed for future reference, but the sheets kept in the back of the book should be left in the binder, unless the cost keeper desires to carry these records forward to a regular ledger form, the use of which is left optional with him, but it is not advised.

If, however, the use of any form of ledger seems absolutely necessary in collating contractor's costs, the cost ledger should be used.

CORRESPONDENCE AND LETTER FILES.

All letters emanating from project offices should be written in duplicate, the carbon copy being kept for reference. Letters, orders, bills, etc., should be filed in vertical sectional cabinets. To each regular correspondent a separate folder should be assigned on which the name of the correspondent should be plainly written. These folders should be arranged alphabetically, and all papers placed therein should be filed in regular order of dates. It is generally preferable to file bills and orders in a separate section from those containing letters. It may be desirable to file papers of a technical character or letters of the project engineer by subjects, in which case the cross reference form may be useful. A files clerk should be detailed to attend to any duty necessary in connection with the proper handling and filing of papers, and no employee other than the file clerk should be allowed to have access to the files. Should the files clerk allow letters to be taken from the files, he should make out a dummy covering every such communication and insert it in the files in place of the letter, so that responsibility for its nonreturn may be fixed. The files clerk should be instructed to file no papers not marked "file" or "office copy," and to see that any letters taken by him from the file baskets bear the initials of clerks who answered them. The observance of a rule of this character may prevent the filing of important papers that have not received careful consideration.

APPROVAL BY DIRECTOR.

It is desired that all officers and employes of the Reclamation Service carefully conform to the suggestions and recommendations contained in this manual of field accounting. In particular, no printing should be undertaken in the field which relates to fiscal matters without submitting the matter to the Director for approval. It is desired that in wording and in the general appearance of blanks used there shall be uniformity and no change made from the methods proposed, unless absolutely necessary for the proper and economical conduct of business. Alterations to suit minor local conditions should not be made, except as above noted.

In the preceding pages the instructions cover correspondence with the office of the Chief Engineer of the Reclamation Service on all fiscal matters. Since the time these were prepared and put in type a change has been made in organization by the designation of a Director of the Reclamation Service on March 9, 1907. Following this change it is desired that communications which relate to fiscal affairs be sent to the Director of the Reclamation Service instead of to the Chief Engineer. Modifications will be made from time to time in the blanks referred to in this manual as new editions are printed, substituting in many places the designation of Director for that of Chief Engineer.

The methods described in this manual should be put in effect by April 1, 1907, if practicable, and not later than May 1.

APPROVED:

F. H. NEWELL,
Director.

MARCH 15, 1907.

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